Supplementary Information

Tracer Injections and Stream Discharge

Tracer-injection methods have been used to quantify discharge in mountain streams to overcome theoretical and logistic difficulties imposed by the traditional velocity-area method (Jarrett, 1992;Rantz, 1982). Because a substantial percentage of stream water may be flowing through porous areas of the streambed that comprise the hyporheic zone (Zellweger and others, 1989), measurement of discharge using the velocity-area method does not account for flow through the hyporheic zone, and discharge estimates based on the velocity-area method may result in an underestimate of metal loads (Zellweger and others, 1989). Another limitation of the velocity-area method for the characterization of metal loads is the time limit it may place on the number of sites that can be sampled in a single day. In the studies described below, numerous instream samples were collected during a single day to characterize stream and inflow chemistry within the hydrologic context of the tracer injection. Velocity-area discharge measurements performed in conjunction with sample collection at such a large number of sites would be difficult, if not impossible.

To apply the tracer-dilution method, an inert tracer is continuously injected into the stream at a constant rate and concentration (Kilpatrick and Cobb, 1985). A key factor is the ability to maintain a constant rate during the continuous tracer injection. During these studies, tracer injections were controlled with precision metering pumps linked to a data logger to provide a means to maintain a constant injection rate as battery voltage decreases. Given sufficient time, all portions of the stream including side pools and the hyporheic zone will reach a steady tracer concentration (Broshears and others, 1993).

During low-flow conditions, decreases in that steady concentration with distance downstream reflect the dilution of tracer by additional surface and ground water entering the channel. During high-flow conditions, the dilution of the tracer in the parcel of water that is being sampled at different locations along the study reach is used to calculate discharge. Application of the tracer-dilution method addresses two problems often noted for synoptic discharge measurements in mountain streams: (1) the tracer enters porous areas of the streambed such that flow through the hyporheic zone is accounted for; and (2) collection of tracer samples when steady concentrations are achieved provides the ability to obtain discharge estimates at numerous locations.

Mass-balance equations are used to determine stream discharge, which is based on the observed dilution of the Br tracer. Because of the circum-neutral pH values found in the Animas River in this study reach, NaBr was used in the individual studies described herein. The Br tracer provided a large concentration contrast with background Br, and also has little tendency to sorb to solid materials in the neutral pH range of these waters. In addition, spatial variability in background concentrations was low, such that background concentrations were nominally uniform. Given these conditions, stream discharge at any location downstream of the injection is given by:

$$Q_A = \frac{C_{INJ} Q_{INJ}}{(C_A - C_{BG})} \tag{1}$$

where Q_A is the stream discharge, in L/s,
C_{INJ} is the injectate concentration, in mg/L,
Q_{INJ} is the injection rate, in L/s,
C_A is the tracer concentration at plateau, in mg/L, and
C_{BG} is the naturally occurring background concentration, in mg/L.

Additional information on tracer-dilution is available in Kimball and others (2002). Previous studies document the transport, chemistry, and toxicity of inorganic tracers

(Bencala and others, 1990; Broshears and others, 1993; Tate and others, 1995; Zellweger, 1994).

The tracer can be diluted in several ways. If no visible inflow occurs between stream sites or seeps or springs are evident in a stream segment, the change in stream discharge likely comes from dispersed, subsurface inflow. If a tributary inflow is present, the change calculated by tracer-dilution includes both the surface-water tributary inflow and any dispersed, subsurface inflow that may be associated with the tributary. Individual discharge measurements of tributary surface-water inflows were not made. Instead, the discharge of an inflow was assigned as the difference in discharge between the downstream and upstream stream sites around the inflow. For a stream segment with more than one sampled inflow, the discharge assigned to the individual inflows is proportioned according to mass balance using the concentrations of a conservative constituent from the inflows (often sulfate at high pH) and the change of constituent mass along the stream segment.

Sample Processing and Analytical Methods

For both studies, stream and inflow samples were collected at predetermined sites. Water temperature was measured onsite and water samples were transported to a central location where samples were divided into several 125-mL bottles with different treatments: a raw (unfiltered) unacidified sample (RU), a raw acidified sample (RA), a filtered unacidified sample (FU), a filtered acidified sample (FA), and an ultrafiltered, acidified sample (UFA). Specific conductance and pH were determined from the RU sample as soon as possible after sample collection. Tangential-flow filtration was used with 0.45-µm membranes (FU and FA samples) and 10,000-Dalton molecular weight membranes (UFA ultrafiltration sample) for the low-flow synoptic sampling.

Ultrafiltration was applied to a few stream sites for high-flow conditions, but the majority of filtration for April 2003 was with 0.45-µm in-line capsule filters, for FA and FU samples. Metal concentrations for the RA, FA, and UFA treatments were determined by inductively coupled plasma-atomic emission spectrometry (Lichte and others, 1987). Anion concentrations were determined from FU samples using ion chromatography (Brinton and others, 1996; Kimball and others, 1999). Total alkalinity was determined by titration from the FA sample (Barringer and Johnsson, 1989).

Constituent Loads

Sampled instream load is calculated as the product of the total-recoverable concentration of the constituent and the stream discharge. Although total-recoverable concentration is used for the total instream load, both instream dissolved and colloidal loads can be calculated individually if both filtered and total-recoverable samples are collected. The longitudinal profile of sampled instream load constitutes the basic data for the mass-loading approach. For each stream segment, the change in load between a pair of stream sites accounts for the gain or loss of constituent load for that segment. The change in load for the segment starting at location *A* and ending at location *B* is:

$$\Delta M_S = (C_B Q_B - C_A Q_A)(0.0864) \qquad (2)$$

where ΔM_S is the change in sampled instream load from location *A* to *B*, in kg/day,

C_B is the concentration of the selected constituent at location *B*, in mg/L,

Q_B is the discharge at location *B*, in L/s,

C_A is the concentration of the selected constituent at location *A*, in mg/L,

Q_A is the discharge at location *A*, in L/s, and

0.0864 is the conversion factor from mg/s to kg/day.

Gains in constituent load (ΔM_S is greater than zero) imply that a source contributes load to the stream between the two stream sites. Because instream processes might reduce the

net gain, the measured change may not indicate the total magnitude of the source. Alternatively, a decrease within a stream segment (ΔM_S is less than zero), indicates a net loss of the constituent as a result of physical, chemical, or biological processes. A net loss does not preclude the presence of a source of loading within a particular stream segment, but it does preclude quantifying the magnitude of that source through changes between stream sites. Summing all the increases in load between sampling sites along the study reach (positive values of ΔM_S) leads to a quantity called the cumulative instream load. At the end of the study reach, the cumulative instream load is the best estimate of the total load added to the stream but is likely a minimum estimate because it only measures the net loading between sites and does not account for metal loads added to and then lost from the water column within individual stream segments. Thus, percentages of loading are best determined by dividing segment loads (ΔM_S) by the cumulative instream load.

In considering estimates of stream discharge and metal concentration at each stream site, it is possible to predict an error for the change in load along a stream segment. The error is determined by the precision of both discharge and chemical measurements (Taylor, 1997), according to the equation (McKinnon, 2002):

$$\text{Load error} = \sqrt{Q_A^2 \Delta C_A^2 + C_A^2 \Delta Q_A^2}\,(.0864) \tag{3}$$

where ΔC_A is the concentration error at site *A*, in mg/L,

ΔQ_A is the discharge error at site *A*, in L/s, and

Q_A, C_A, and 0.0864 are defined in equation 2.

The value of ΔC_A is based on the single operator precision of the chemical analysis (Friedman and Erdmann, 1982). The value of ΔQ_A is based on the precision of the tracer concentration analysis of repeated measurements at sites that cover the range of discharge in the study reach. This results in a precision value that is a function of discharge. Load

error is calculated for the upstream sampling site of each stream segment and compared to the change in load for the stream segment, ΔM_S. If the absolute value of ΔM_S is greater than the load error, then there has been a significant change in load. Only the values of ΔM_S that are greater than the load error are included in the longitudinal profiles of cumulative instream load.

Cluster Analysis for Sample Classification

An important objective of synoptic sampling is to recognize patterns or chemical characteristics among samples that can indicate the sources of mine drainage. Water that interacts with a particular mineral assemblage may exhibit a characteristic chemical signature that provides distinction from other inflow samples. Thus, groups of inflow samples are identified by their similarities using a cluster-analysis method called partitioning around medoids to objectively quantify distinctions among the samples (Kaufman and Rousseeuw, 1990). The method uses Euclidian distance as a multivariate measure of differences among samples, and the method minimizes the differences among samples within a group, or cluster, while distinguishing differences among groups. Total-recoverable concentrations were used as input to the analysis for inflow samples, and both dissolved and colloidal concentrations were used for stream samples. Variability among inflow chemistry often can result from the extent of water-rock interaction. This can lead to relations among variables that arise from mass-balance stoichiometry during dissolution and chemical equilibrium during precipitation. These relations often are expressed linearly in log transformed data, and thus, the chemical concentration of each constituent, expressed in millimoles per liter, was log-transformed to improve correlations that may be related to the stoichiometry of particular chemical reactions and mineral equilibrium constraints.

Reference List

Jarrett,R.D., 1992, Hydraulics of mountain rivers, *in* Channel flow resistance centennial of Manning's and Kuichling's rational formula: Littleton, Colorado, Water Resources Publications, p. 287-298.

Kaufman,L., and Rousseeuw,P.J., 1990, Finding groups in data: An introduction to cluster analysis: New York, Wiley 1-368 p.

Kilpatrick,F.A., and Cobb,E.D., 1985, Measurement of discharge using tracers (book 3, chap. A16 ed.)U.S. Geological Survey 1-27 p.

Rantz,S.E., 1982, Measurement and computation of streamflow: Volume 1. Measurement of stage and discharge (2175 ed.)U.S. Geological Survey 1-284 p.

Table E1. Chemical analyses of low- and high-flow synoptic samples
[Filter: UFA, ultrafiltration, FA, 0.45-micrometer, RA, total recoverable; mg/L, milligrams per liter; ug/L, micrograms per liter; blank cells, no analysis; Sodium bromide injected]

Study	Sample identification	Source	Distance	Filter	Description	Date	Time	Specific conductance
			meters					microsiemens/cm
Low	A3-3655	Stream	3,655	UFA	Injection site and T0 upstream fromove	8/31/02	16:30	320
Low	A3-3655	Stream	3,655	FA	Injection site and T0 upstream fromove	8/31/02	16:30	320
Low	A3-3655	Stream	3,655	RA	Injection site and T0 upstream fromove	8/31/02	16:30	320
Low	A3-4023	Stream	3,909	UFA	Downstream from injection	8/31/02	16:12	318
Low	A3-4023	Stream	3,909	FA	Downstream from injection	8/31/02	16:12	318
Low	A3-4023	Stream	3,909	RA	Downstream from injection	8/31/02	16:12	318
Low	A3-4161	Inflow	4,033	FA	right bank cascade from rocky bank (4033)	8/31/02	16:30	323
Low	A3-4161	Inflow	4,033	RA	right bank cascade from rocky bank (4033)	8/31/02	16:30	323
Low	A3-4166	Stream	4,166	UFA	T1 --> Upstream from Arastra	8/31/02	15:50	329
Low	A3-4166	Stream	4,166	FA	T1 --> Upstream from Arastra	8/31/02	15:50	329
Low	A3-4166	Stream	4,166	RA	T1 --> Upstream from Arastra	8/31/02	15:50	329
Low	A3-4186	Inflow	4,186	UFA	Arastra Gulch	8/31/02	15:51	239
Low	A3-4186	Inflow	4,186	FA	Arastra Gulch	8/31/02	15:51	239
Low	A3-4186	Inflow	4,186	RA	Arastra Gulch	8/31/02	15:51	239
Low	A3-4250A	Stream	4,250	UFA	Downstream from Arastra Gulch	8/31/02	15:33	316
Low	A3-4250A	Stream	4,250	FA	Downstream from Arastra Gulch	8/31/02	15:33	316
Low	A3-4250A	Stream	4,250	RA	Downstream from Arastra Gulch	8/31/02	15:33	316
Low	A3-4250B	Stream	4,250	UFA	Downstream from Arastra Gulch	8/31/02	15:38	315
Low	A3-4250B	Stream	4,250	FA	Downstream from Arastra Gulch	8/31/02	15:38	315
Low	A3-4250B	Stream	4,250	RA	Downstream from Arastra Gulch	8/31/02	15:38	315
Low	A3-4300	Inflow	4,300	FA	Small spring upstream from pipe bridge	8/30/02	13:34	611
Low	A3-4353	Inflow	4,353	FA	Stream level spring	8/30/02	13:47	1,662
Low	A3-4385	Inflow	4,385	FU	Moss and Al pptn at spring	8/30/02	14:05	1,602
Low	A3-4473	Stream	4,473	UFA	Downstream from right bank acid inflows	8/31/02	15:20	313
Low	A3-4473	Stream	4,473	FA	Downstream from right bank acid inflows	8/31/02	15:20	313
Low	A3-4473	Stream	4,473	RA	Downstream from right bank acid inflows	8/31/02	15:20	313
Low	A3-4520	Inflow	4,520	FA	Additional spring on right bank	8/30/02	14:35	3,310
Low	A3-4544	Inflow	4,544	FA	Algal pond downstream from dry marsh	8/30/02	14:25	2,500
Low	A3-4581	Stream	4,581	UFA	Upstream from dry inflow draining left bank and old gravity mill	8/31/02	15:05	312
Low	A3-4581	Stream	4,581	FA	Upstream from dry inflow draining left bank and old gravity mill	8/31/02	15:05	312
Low	A3-4581	Stream	4,581	RA	Upstream from dry inflow draining left bank and old gravity mill	8/31/02	15:05	312

Table E1. Chemical analyses of low- and high-flow synoptic samples
[Filter: UFA, ultrafiltration, FA, 0.45-micrometer, RA, total recoverable; mg/L, milligrams per liter; ug/L, micrograms per liter; blank cells, no analysis; Sodium bromide injected]

Study	Sample identification	Source	Distance	Filter	Description	Date	Time	Specific conductance
			meters					microsiemens/cm
Low	A3-4713	Stream	4,713	UFA	Downstream from "Pinicle Gap"	8/31/02	14:52	311
Low	A3-4713	Stream	4,713	FA	Downstream from "Pinicle Gap"	8/31/02	14:52	311
Low	A3-4713	Stream	4,713	RA	Downstream from "Pinicle Gap"	8/31/02	14:52	311
Low	A3-4806	Stream	4,806	UFA	Upstream from Acid inflows	8/31/02	14:25	313
Low	A3-4806	Stream	4,806	FA	Upstream from Acid inflows	8/31/02	14:25	313
Low	A3-4806	Stream	4,806	RA	Upstream from Acid inflows	8/31/02	14:25	313
Low	A3-4886	Inflow	4,886	FU	Seep w/ acid algae	8/30/02	15:00	2,450
Low	A3-4916A	Stream	4,916	FU	T2 --> Downstream from acid inflows, upstream from Boulder Creek	8/31/02	14:10	320
Low	A3-4916B	Stream	4,916	UFA	T2 --> Downstream from acid inflows, upstream from Boulder Creek	8/31/02	14:17	329
Low	A3-4916B	Stream	4,916	FA	T2 --> Downstream from acid inflows, upstream from Boulder Creek	8/31/02	14:17	329
Low	A3-4916B	Stream	4,916	RA	T2 --> Downstream from acid inflows, upstream from Boulder Creek	8/31/02	14:17	329
Low	A3-4951	Inflow	4,951	FA	Boulder Creek A62	8/31/02	14:04	171
Low	A3-4951	Inflow	4,951	RA	Boulder Creek A62	8/31/02	14:04	171
Low	A3-5016	Stream	5,016	UFA	Downstream from Boulder Creek	8/31/02	13:58	310
Low	A3-5016	Stream	5,016	FA	Downstream from Boulder Creek	8/31/02	13:58	310
Low	A3-5016	Stream	5,016	RA	Downstream from Boulder Creek	8/31/02	13:58	310
Low	A3-5038	Inflow	5,038	UFA	Substantial orange ppt inflow	8/31/02	13:54	2,380
Low	A3-5038	Inflow	5,038	FA	Substantial orange ppt inflow	8/31/02	13:54	2,380
Low	A3-5038	Inflow	5,038	RA	Substantial orange ppt inflow	8/31/02	13:54	2,380
Low	A3-5131	Stream	5,131	UFA	Downstream from orange ppt tailings bin	8/31/02	13:45	318
Low	A3-5131	Stream	5,131	FA	Downstream from orange ppt tailings bin	8/31/02	13:45	318
Low	A3-5131	Stream	5,131	RA	Downstream from orange ppt tailings bin	8/31/02	13:45	318
Low	A3-5161	Inflow	5,161	FA	Pond to stream left bank with fish	8/31/02	13:40	936
Low	A3-5221	Inflow	5,221	FA	Drainage from Aspen Mine (not Blair Gulch)	8/31/02	13:35	914
Low	A3-5251	Stream	5,251	UFA	Downstream from Aspen Mine; upstream from seepage inflows	8/31/02	13:25	321
Low	A3-5251	Stream	5,251	FA	Downstream from Aspen Mine; upstream from seepage inflows	8/31/02	13:25	321
Low	A3-5251	Stream	5,251	RA	Downstream from Aspen Mine; upstream from seepage inflows	8/31/02	13:25	321
Low	A3-5269	Inflow	5,269	FU	Beginning of right bank algal seeps	8/30/02	15:20	1,289
Low	A3-5295	Inflow	5,295	FA	Drainage from left bank alteration	8/30/02	15:28	1,897
Low	A3-5306	Stream	5,306	UFA	Downstream from seeps on both sides	8/31/02	13:16	313
Low	A3-5306	Stream	5,306	FA	Downstream from seeps on both sides	8/31/02	13:16	313

Table E1. Chemical analyses of low- and high-flow synoptic samples
[Filter: UFA, ultrafiltration, FA, 0.45-micrometer, RA, total recoverable; mg/L, milligrams per liter; ug/L, micrograms per liter; blank cells, no analysis; Sodium bromide injected]

Study	Sample identification	Source	Distance	Filter	Description	Date	Time	Specific conductance
			meters					microsiemens/cm
Low	A3-5306	Stream	5,306	RA	Downstream from seeps on both sides	8/31/02	13:16	313
Low	A3-5356	Inflow	5,356	UFA	Discharge from slough draining tailings	8/31/02	12:48	1,728
Low	A3-5356	Inflow	5,356	FA	Discharge from slough draining tailings	8/31/02	12:48	1,728
Low	A3-5356	Inflow	5,356	RA	Discharge from slough draining tailings	8/31/02	12:48	1,728
Low	A3-5448	Stream	5,448	UFA	Integrating right bank inflow from slough	8/31/02	12:35	315
Low	A3-5448	Stream	5,448	FA	Integrating right bank inflow from slough	8/31/02	12:35	315
Low	A3-5448	Stream	5,448	RA	Integrating right bank inflow from slough	8/31/02	12:35	315
Low	A3-5536	Stream	5,536	UFA	Stream at Power Plant	8/31/02	12:20	314
Low	A3-5536	Stream	5,536	FA	Stream at Power Plant	8/31/02	12:20	314
Low	A3-5536	Stream	5,536	RA	Stream at Power Plant	8/31/02	12:20	314
Low	A3-5756	Stream	5,756	UFA	Upstream from right bank drainage ditch behind power plant	8/31/02	12:02	324
Low	A3-5756	Stream	5,756	FA	Upstream from right bank drainage ditch behind power plant	8/31/02	12:02	324
Low	A3-5756	Stream	5,756	RA	Upstream from right bank drainage ditch behind power plant	8/31/02	12:02	324
Low	A3-5815	Inflow	5,815	FU	Draining from fern and moss	8/30/02	16:32	458
Low	A3-5858	Inflow	5,858	FA	Seep along 60 m of grass	8/30/02	16:50	661
Low	A3-5965	Inflow	5,965	FA	Small pool near stream	8/30/02	16:17	542
Low	A3-6038	Stream	6,038	UFA	Old T5--Integration of seeps on both sides	8/31/02	11:42	319
Low	A3-6038	Stream	6,038	FA	Old T5--Integration of seeps on both sides	8/31/02	11:42	319
Low	A3-6038	Stream	6,038	RA	Old T5--Integration of seeps on both sides	8/31/02	11:42	319
Low	A3-6126	Stream	6,126	UFA	Upstream from substantial right bank staining	8/31/02	11:26	321
Low	A3-6126	Stream	6,126	FA	Upstream from substantial right bank staining	8/31/02	11:26	321
Low	A3-6126	Stream	6,126	RA	Upstream from substantial right bank staining	8/31/02	11:26	321
Low	A3-6131	Inflow	6,131	FA	At base of colluvium	8/31/02	11:17	638
Low	A3-6131	Inflow	6,131	RA	At base of colluvium	8/31/02	11:17	638
Low	A3-6150	Inflow	6,150	UFA	Red stained right bank discharge	8/31/02	11:11	1,554
Low	A3-6150	Inflow	6,150	FA	Red stained right bank discharge	8/31/02	11:11	1,554
Low	A3-6150	Inflow	6,150	RA	Red stained right bank discharge	8/31/02	11:11	1,554
Low	A3-6265	Stream	6,265	UFA	downstream from major right bank inflow from tailings drainage	8/31/02	10:53	333
Low	A3-6265	Stream	6,265	FA	Downstream from major right bank inflow from tailings drainage	8/31/02	10:53	333
Low	A3-6265	Stream	6,265	RA	Downstream from major right bank inflow from tailings drainage	8/31/02	10:53	333
Low	A3-6465	Stream	6,465	UFA	Downstream from many right bank seeps	8/31/02	10:36	300

Table E1. Chemical analyses of low- and high-flow synoptic samples
[Filter: UFA, ultrafiltration, FA, 0.45-micrometer, RA, total recoverable; mg/L, milligrams per liter; ug/L, micrograms per liter; blank cells, no analysis; Sodium bromide injected]

Study	Sample identification	Source	Distance	Filter	Description	Date	Time	Specific conductance
			meters					microsiemens/cm
Low	A3-6465	Stream	6,465	FA	Downstream from many right bank seeps	8/31/02	10:36	300
Low	A3-6465	Stream	6,465	RA	Downstream from many right bank seeps	8/31/02	10:36	300
Low	A3-6745	Stream	6,745	UFA	At Lacawana Bridge	8/31/02	10:11	338
Low	A3-6745	Stream	6,745	FA	At Lacawana Bridge	8/31/02	10:11	338
Low	A3-6745	Stream	6,745	RA	At Lacawana Bridge	8/31/02	10:11	338
Low	A3-6994	Stream	6,994	UFA	Upstream from Lacawana Mill	8/31/02	10:02	335
Low	A3-6994	Stream	6,994	FA	Upstream from Lacawana Mill	8/31/02	10:02	335
Low	A3-6994	Stream	6,994	RA	Upstream from Lacawana Mill	8/31/02	10:02	335
Low	A3-7049	Inflow	7,049	FA	New left bank inflow	8/31/02	9:54	797
Low	A3-7177	Stream	7,177	UFA	Upstream from Lacawana discharge	8/31/02	9:36	322
Low	A3-7177	Stream	7,177	FA	Upstream from Lacawana discharge	8/31/02	9:36	322
Low	A3-7177	Stream	7,177	RA	Upstream from Lacawana discharge	8/31/02	9:36	322
Low	A3-7201	Inflow	7,201	FA	Discharge from Lacawana area, pond	8/31/02	9:28	294
Low	A3-7201	Inflow	7,201	RA	Discharge from Lacawana area, pond	8/31/02	9:28	294
Low	A3-7306	Stream	7,306	UFA	Downstream from Lacawana Mill (A66)	8/31/02	9:15	335
Low	A3-7306	Stream	7,306	FA	Downstream from Lacawana Mill (A66)	8/31/02	9:15	335
Low	A3-7306	Stream	7,306	RA	Downstream from Lacawana Mill (A66)	8/31/02	9:15	335
Low	A3-7585	Stream	7,585	UFA	Downstream from braids, good mixing	8/31/02	9:02	336
Low	A3-7585	Stream	7,585	FA	Downstream from braids, good mixing	8/31/02	9:02	336
Low	A3-7585	Stream	7,585	RA	Downstream from braids, good mixing	8/31/02	9:02	336
Low	A3-7750	Inflow	7,750	UFA	Ditch draining from pond nr roaster fines?	8/31/02	8:55	1,801
Low	A3-7750	Inflow	7,750	FA	Ditch draining from pond nr roaster fines?	8/31/02	8:55	1,801
Low	A3-7750	Inflow	7,750	RA	Ditch draining from pond nr roaster fines?	8/31/02	8:55	1,801
Low	A3-7858	Stream	7,858	UFA	T3--At bridge / gage A68	8/31/02	8:45	331
Low	A3-7858	Stream	7,858	FA	T3--At bridge / gage A68	8/31/02	8:45	331
Low	A3-7858	Stream	7,858	RA	T3--At bridge / gage A68	8/31/02	8:45	331
High	A3HF-4023	Stream	3,909	FU	Upstream 10 m from cascading right bank inflow	4/16/03	14:55	256
High	A3HF-4161	Inflow	4,033	FU	Right bank cascade from rocky bank (4033)	4/16/03	14:00	103
High	A3HF-4166	Stream	4,166	FU	T1 --> Upstream from Arrastra	4/16/03	15:05	271
High	A3HF-4186	Inflow	4,186	FU	Arastra Gulch	4/16/03	15:03	117
High	A3HF-4250	Stream	4,250	FU	T2 --> Downstream from bend Downstream from Arastra Gulch	4/16/03	15:08	157

Table E1. Chemical analyses of low- and high-flow synoptic samples
[Filter: UFA, ultrafiltration, FA, 0.45-micrometer, RA, total recoverable; mg/L, milligrams per liter; ug/L, micrograms per liter; blank cells, no analysis; Sodium bromide injected]

Study	Sample identification	Source	Distance	Filter	Description	Date	Time	Specific conductance
			meters					microsiemens/cm
High	A3HF-4385	Inflow	4,385	FU	Moss and Al pptn at spring	4/16/03	14:42	1,710
High	A3HF-WP142	Inflow	4,533	FU	Marshy ponds with algae near manganocrete	4/16/03	15:25	4,090
High	A3HF-4580	Inflow	4,586	FU	Dripping from moss after draining ponds	4/16/03	15:15	1,492
High	A3HF-4892	Inflow	4,886	FU	Largest channel of several coming in	4/16/03	16:10	1,586
High	A3HF-4916	Stream	4,916	FU	T3 --> Downstream from acid inflows, Upstream from Boulder Creek	4/16/03	15:30	239
High	A3HF-4951	Inflow	4,951	FU	Boulder Creek A62	4/16/03	15:40	12
High	A3HF-5038	Inflow	5,038	FU	Substantial orange ppt inflow	4/16/03	16:00	1,760
High	A3HF-5221	Inflow	5,221	FU	Drainage from Aspen Mine	4/16/03	15:53	838
High	A3HF-5356	Inflow	5,356	FU	Discharge from slough draining tailings	4/16/03	16:40	2,510
High	A3HF-5536	Stream	5,536	FU	T4 --> Stream at Power Plant	4/16/03	15:45	115
High	A3HF-5855	Inflow	5,858	FU	Ditch draining from power plant	4/16/03	16:28	191
High	A3HF-6150	Inflow	6,150	FU	Red stained right bank discharge	4/16/03	17:10	2,160
High	A3HF-6745	Stream	6,745	FU	T5 --> At Lacawana Bridge	4/16/03	16:20	173
High	A3HF-7100	Inflow	7,201	FU	Drains right bank "protected" wetland area	4/16/03	17:22	30
High	A3HF-7306	Stream	7,306	FU	T6 --> Downstream from Lacawana Mill (A66)	4/16/03	16:35	71
High	A3HF-7750	Inflow	7,750	FU	Ditch draining from pond nr roaster fines?	4/16/03	17:38	1,081
High	A3HF-7858A	Stream	7,858	FU	T7--> At bridge / gage A68	4/16/03	16:50	133
High	A3HF-7858B	Stream	7,858	FU	T7--> At bridge / gage A68	4/16/03	16:55	195

Table E1. Chemical analyses of low- and high-flow synoptic samples
[Filter: UFA, ultrafiltration, FA, 0.45-micrometer, RA, total recoverable; mg/L, milligrams per liter; ug/L, micrograms per liter; blank cells, no analysis; Sodium bromide injected]

Study	Sample identification	Source	Distance	Filter	pH	Temperature	Calcium	Magnesium	Sodium	Potassium	Alkalinity	Sulfate	Sulfate, icp
			meters			Celcius	mg/L	mg/L	mg/L	mg/L	mg/L as CaCO3	mg/L	mg/L
Low	A3-3655	Stream	3,655	UFA	7.77	15.5	49.0	3.02	2.14	.65	30.22	121	110
Low	A3-3655	Stream	3,655	FA	7.77	15.5	52.5	3.21	2.29	.70	30.22	121	116
Low	A3-3655	Stream	3,655	RA	7.77	15.5	50.4	3.09	2.13	.68	30.22	121	112
Low	A3-4023	Stream	3,909	UFA	7.88	15.5	49.5	2.99	2.44	.64	30.97	121	107
Low	A3-4023	Stream	3,909	FA	7.88	15.5	51.1	3.21	2.56	.67	30.97	121	115
Low	A3-4023	Stream	3,909	RA	7.88	15.5	56.5	3.22	2.55	.72	30.97	121	
Low	A3-4161	Inflow	4,033	FA	8.32	9.0	52.7	3.28	3.40	.43	74.72	78.5	73.25
Low	A3-4161	Inflow	4,033	RA	8.32	9.0	58.4	3.63	3.51	.48	74.72	78.5	
Low	A3-4166	Stream	4,166	UFA	8.10	15.5	50.5	3.13	2.60	.74	28.96	121	121
Low	A3-4166	Stream	4,166	FA	8.10	15.5	50.0	3.06	2.51	.61	28.96	121	109
Low	A3-4166	Stream	4,166	RA	8.10	15.5	57.0	3.25	2.58	.70	28.96	121	
Low	A3-4186	Inflow	4,186	UFA	8.05	9.5	38.0	1.92	2.37	.54	51.85	63.2	59.23
Low	A3-4186	Inflow	4,186	FA	8.05	9.5	39.8	1.96	2.39	.54	51.85	63.2	60.16
Low	A3-4186	Inflow	4,186	RA	8.05	9.5	41.5	1.97	2.27	.55	51.85	63.2	
Low	A3-4250A	Stream	4,250	UFA	8.01	14.5	47.7	2.94	2.44	.69	32.03	115	107
Low	A3-4250A	Stream	4,250	FA	8.01	14.5	51.5	3.13	2.63	.68	32.03	115	112
Low	A3-4250A	Stream	4,250	RA	8.01	14.5	52.2	3.05	2.40	.67	32.03	115	
Low	A3-4250B	Stream	4,250	UFA	7.89	14.5	49.9	2.97	2.47	.71	35.32	114	108
Low	A3-4250B	Stream	4,250	FA	7.89	14.5	50.8	3.00	2.53	.64	35.32	114	107
Low	A3-4250B	Stream	4,250	RA	7.89	14.5	49.5	3.01	2.48	.66	35.32	114	109
Low	A3-4300	Inflow	4,300	FA	7.33	8.5	106	8.56	4.79	1.05	35.01	265	240
Low	A3-4353	Inflow	4,353	FA	4.48	20.5	206	37.8	6.97	2.99	< .01	1,112	894
Low	A3-4385	Inflow	4,385	FU	4.69	15.0					< .01	1,001	
Low	A3-4473	Stream	4,473	UFA	7.91	15.0	48.0	3.05	2.46	.64	32.47	114	106
Low	A3-4473	Stream	4,473	FA	7.91	15.0	49.2	3.03	2.55	.65	32.47	114	104
Low	A3-4473	Stream	4,473	RA	7.91	15.0	52.8	2.94	2.35	.69	32.47	114	
Low	A3-4520	Inflow	4,520	FA	4.73	19.5	302	63.9	8.69	5.59	< .01	2,767	2,392
Low	A3-4544	Inflow	4,544	FA	5.05	23.0	268	52.4	9.27	4.44	< .01	2,065	1,945
Low	A3-4581	Stream	4,581	UFA	8.03	15.0	49.5	3.04	2.50	.67	34.57	115	108
Low	A3-4581	Stream	4,581	FA	8.03	15.0	51.6	3.13	2.67	.66	34.57	115	112
Low	A3-4581	Stream	4,581	RA	8.03	15.0	55.3	3.15	2.57	.69	34.57	115	

Table E1. Chemical analyses of low- and high-flow synoptic samples
[Filter: UFA, ultrafiltration, FA, 0.45-micrometer, RA, total recoverable; mg/L, milligrams per liter; ug/L, micrograms per liter; blank cells, no analysis; Sodium bromide injected]

Study	Sample identification	Source	Distance	Filter	pH	Temperature	Calcium	Magnesium	Sodium	Potassium	Alkalinity	Sulfate	Sulfate, icp
			meters			Celcius	mg/L	mg/L	mg/L	mg/L	mg/L as CaCO3	mg/L	mg/L
Low	A3-4713	Stream	4,713	UFA	7.99	15.0	49.6	3.00	2.55	.66	32.50	115	106
Low	A3-4713	Stream	4,713	FA	7.99	15.0	50.9	3.05	2.51	.65	32.50	115	111
Low	A3-4713	Stream	4,713	RA	7.99	15.0	50.4	3.06	2.52	.64	32.50	115	110
Low	A3-4806	Stream	4,806	UFA	7.74	14.5	53.1	3.05	2.64	.65	31.04	115	105
Low	A3-4806	Stream	4,806	FA	7.74	14.5	49.6	3.11	2.51	.65	31.04	115	106
Low	A3-4806	Stream	4,806	RA	7.74	14.5	54.4	3.07	2.42	.63	31.04	115	
Low	A3-4886	Inflow	4,886	FU	6.05	14.5					33.63	1,668	
Low	A3-4916A	Stream	4,916	FU	7.94	14.5						118	
Low	A3-4916B	Stream	4,916	UFA	7.83	14.0	51.1	3.11	2.59	.70	33.95	118	113
Low	A3-4916B	Stream	4,916	FA	7.83	14.0	51.9	3.13	2.58	.71	33.95	118	115
Low	A3-4916B	Stream	4,916	RA	7.83	14.0	53.2	3.13	2.44	.67	33.95	118	
Low	A3-4951	Inflow	4,951	FA	8.07	14.0	26.3	1.39	1.42	.36	30.53	43.2	45.02
Low	A3-4951	Inflow	4,951	RA	8.07	14.0	25.4	1.31	1.33	.39	30.53	43.2	41.27
Low	A3-5016	Stream	5,016	UFA	7.90	14.0	50.8	3.02	2.50	.68	32.41	114	108
Low	A3-5016	Stream	5,016	FA	7.90	14.0	49.0	2.92	2.42	.68	32.41	114	104
Low	A3-5016	Stream	5,016	RA	7.90	14.0	53.3	3.09	2.40	.62	32.41	114	
Low	A3-5038	Inflow	5,038	UFA	6.14	16.5	400	35.9	13.4	22.6	49.19	1,581	1,457
Low	A3-5038	Inflow	5,038	FA	6.14	16.5	403	34.3	14.0	23.1	49.19	1,581	1,402
Low	A3-5038	Inflow	5,038	RA	6.14	16.5	441	34.2	14.3	24.8	49.19	1,581	1,416
Low	A3-5131	Stream	5,131	UFA	7.79	14.0	50.8	3.10	2.52	.72	33.23	115	112
Low	A3-5131	Stream	5,131	FA	7.79	14.0	51.5	3.08	2.59	.64	33.23	115	113
Low	A3-5131	Stream	5,131	RA	7.79	14.0	54.7	3.13	2.46	.68	33.23	115	
Low	A3-5161	Inflow	5,161	FA	7.02	15.0	192	3.87	4.01	.50	48.41	469	429
Low	A3-5221	Inflow	5,221	FA	7.52	13.0	183	3.56	3.78	.60	42.78	450	418
Low	A3-5251	Stream	5,251	UFA	7.84	14.0	51.8	3.04	2.53	.68	33.70	120	114
Low	A3-5251	Stream	5,251	FA	7.84	14.0	51.7	3.04	2.51	.65	33.70	120	110
Low	A3-5251	Stream	5,251	RA	7.84	14.0	51.6	3.03	2.47	.67	33.70	120	112
Low	A3-5269	Inflow	5,269	FU	3.27	18.0					< .01	681	
Low	A3-5295	Inflow	5,295	FA	2.42	14.0	59.8	13.1	2.66	.28		956	754
Low	A3-5306	Stream	5,306	UFA	7.81	13.5	52.6	2.98	2.54	.70	34.15	121	111
Low	A3-5306	Stream	5,306	FA	7.81	13.5	52.9	3.07	2.53	.64	34.15	121	115

Table E1. Chemical analyses of low- and high-flow synoptic samples
[Filter: UFA, ultrafiltration, FA, 0.45-micrometer, RA, total recoverable; mg/L, milligrams per liter; ug/L, micrograms per liter; blank cells, no analysis; Sodium bromide injected]

Study	Sample identification	Source	Distance	Filter	pH	Temperature	Calcium	Magnesium	Sodium	Potassium	Alkalinity	Sulfate	Sulfate, icp
			meters			Celcius	mg/L	mg/L	mg/L	mg/L	mg/L as CaCO3	mg/L	mg/L
Low	A3-5306	Stream	5,306	RA	7.81	13.5	56.0	3.06	2.40	.63	34.15	121	
Low	A3-5356	Inflow	5,356	UFA	3.67	11.5	277	21.0	7.00	1.63	< .01	1,101	937
Low	A3-5356	Inflow	5,356	FA	3.67	11.5	263	21.1	6.86	1.56	< .01	1,101	965
Low	A3-5356	Inflow	5,356	RA	3.67	11.5	292	23.4	6.95	1.86	< .01	1,101	923
Low	A3-5448	Stream	5,448	UFA	7.89	12.0	53.2	3.08	2.59	.63	33.10	123	123
Low	A3-5448	Stream	5,448	FA	7.89	12.0	54.0	3.22	2.53	.69	33.10	123	121
Low	A3-5448	Stream	5,448	RA	7.89	12.0	57.6	3.14	2.54	.67	33.10	123	
Low	A3-5536	Stream	5,536	UFA	7.89	11.5	52.1	2.94	2.44	.68	33.48	123	114
Low	A3-5536	Stream	5,536	FA	7.89	11.5	53.8	3.13	2.52	.71	33.48	123	118
Low	A3-5536	Stream	5,536	RA	7.89	11.5	52.6	3.05	2.46	.63	33.48	123	115
Low	A3-5756	Stream	5,756	UFA	7.79	11.0	51.8	3.06	2.47	.65	34.57	121	116
Low	A3-5756	Stream	5,756	FA	7.79	11.0	53.4	3.15	2.61	.62	34.57	121	116
Low	A3-5756	Stream	5,756	RA	7.79	11.0	58.2	3.10	2.44	.59	34.57	121	
Low	A3-5815	Inflow	5,815	FU	6.49	12.0					32.64	199	
Low	A3-5858	Inflow	5,858	FA	6.19	15.0	110	7.27	4.64	4.11	20.68	344	321
Low	A3-5965	Inflow	5,965	FA	6.71	21.0	99.9	2.36	3.01	.84	27.23	233	227
Low	A3-6038	Stream	6,038	UFA	7.78	10.5	51.5	2.94	2.51	.66	31.51	123	113
Low	A3-6038	Stream	6,038	FA	7.78	10.5	53.7	3.09	2.57	.59	31.51	123	120
Low	A3-6038	Stream	6,038	RA	7.78	10.5	52.4	3.02	2.48	.65	31.51	123	115
Low	A3-6126	Stream	6,126	UFA	7.66	10.0	51.2	3.07	2.40	.66	35.08	125	112
Low	A3-6126	Stream	6,126	FA	7.66	10.0	54.0	3.12	2.59	.63	35.08	125	119
Low	A3-6126	Stream	6,126	RA	7.66	10.0	57.6	3.22	2.53	.62	35.08	125	
Low	A3-6131	Inflow	6,131	FA	6.88	12.0	126	2.93	3.58	.71	30.76	299	279
Low	A3-6131	Inflow	6,131	RA	6.88	12.0	121	2.98	3.59	.68	30.76	299	279
Low	A3-6150	Inflow	6,150	UFA	5.46	17.0	187	25.4	5.77	4.13	< .01	1,032	885
Low	A3-6150	Inflow	6,150	FA	5.46	17.0	183	26.5	5.79	4.45	< .01	1,032	860
Low	A3-6150	Inflow	6,150	RA	5.46	17.0	209	25.2	6.00	4.19	< .01	1,032	869
Low	A3-6265	Stream	6,265	UFA	7.79	10.0	53.8	3.23	2.57	.70	37.34	126	121
Low	A3-6265	Stream	6,265	FA	7.79	10.0	54.5	3.24	2.52	.64	37.34	126	118
Low	A3-6265	Stream	6,265	RA	7.79	10.0	57.4	3.14	2.46	.67	37.34	126	
Low	A3-6465	Stream	6,465	UFA	7.64	8.0	54.4	3.11	2.51	.66	32.50	128	121

Table E1. Chemical analyses of low- and high-flow synoptic samples
[Filter: UFA, ultrafiltration, FA, 0.45-micrometer, RA, total recoverable; mg/L, milligrams per liter; ug/L, micrograms per liter; blank cells, no analysis; Sodium bromide injected]

Study	Sample identification	Source	Distance	Filter	pH	Temperature	Calcium	Magnesium	Sodium	Potassium	Alkalinity	Sulfate	Sulfate, icp
			meters			Celcius	mg/L	mg/L	mg/L	mg/L	mg/L as CaCO3	mg/L	mg/L
Low	A3-6465	Stream	6,465	FA	7.64	8.0	54.8	3.20	2.56	.67	32.50	128	122
Low	A3-6465	Stream	6,465	RA	7.64	8.0	57.7	3.23	2.55	.73	32.50	128	
Low	A3-6745	Stream	6,745	UFA	7.56	8.0	54.8	3.18	2.57	.69	34.58	127	121
Low	A3-6745	Stream	6,745	FA	7.56	8.0	53.8	3.05	2.45	.64	34.58	127	119
Low	A3-6745	Stream	6,745	RA	7.56	8.0	54.2	3.14	2.54	.63	34.58	127	120
Low	A3-6994	Stream	6,994	UFA	7.57	9.0	53.2	3.21	2.52	.67	35.33	127	118
Low	A3-6994	Stream	6,994	FA	7.57	9.0	56.7	3.32	2.76	.66	35.33	127	123
Low	A3-6994	Stream	6,994	RA	7.57	9.0	57.3	3.32	2.61	.69	35.33	127	
Low	A3-7049	Inflow	7,049	FA	5.79	14.5	141	9.68	4.83	3.00	3.92	440	406
Low	A3-7177	Stream	7,177	UFA	7.41	7.0	53.9	3.12	2.50	.69	34.66	128	118
Low	A3-7177	Stream	7,177	FA	7.41	7.0	54.4	3.21	2.62	.62	34.66	128	122
Low	A3-7177	Stream	7,177	RA	7.41	7.0	55.8	3.14	2.44	.70	34.66	128	
Low	A3-7201	Inflow	7,201	FA	7.95	9.0	50.7	3.05	3.34	.56	45.89	102	99.78
Low	A3-7201	Inflow	7,201	RA	7.95	9.0	50.3	3.00	2.97	.53	45.89	102	
Low	A3-7306	Stream	7,306	UFA	7.41	7.0	55.8	3.29	2.69	.71	32.98	131	130
Low	A3-7306	Stream	7,306	FA	7.41	7.0	55.4	3.28	2.66	.70	32.98	131	125
Low	A3-7306	Stream	7,306	RA	7.41	7.0	56.1	3.27	2.44	.77	32.98	131	
Low	A3-7585	Stream	7,585	UFA	7.64	7.0	53.9	3.21	2.53	.73	35.01	131	124
Low	A3-7585	Stream	7,585	FA	7.64	7.0	54.6	3.25	2.51	.64	35.01	131	122
Low	A3-7585	Stream	7,585	RA	7.64	7.0	58.0	3.20	2.44	.64	35.01	131	
Low	A3-7750	Inflow	7,750	UFA	5.97	10.0	366	24.1	11.2	5.86	14.00	1,153	1,073
Low	A3-7750	Inflow	7,750	FA	5.97	10.0	364	24.2	11.2	5.93	14.00	1,153	1,036
Low	A3-7750	Inflow	7,750	RA	5.97	10.0	398	27.2	10.9	5.80	14.00	1,153	1,052
Low	A3-7858	Stream	7,858	UFA	7.39	6.5	53.2	3.10	2.52	.73	34.17	132	119
Low	A3-7858	Stream	7,858	FA	7.39	6.5	54.7	3.28	2.63	.70	34.17	132	124
Low	A3-7858	Stream	7,858	RA	7.39	6.5	58.7	3.35	2.64	.76	34.17	132	
High	A3HF-4023	Stream	3,909	FU	7.36	9.0						97.0	
High	A3HF-4161	Inflow	4,033	FU	7.79	4.5						32.9	
High	A3HF-4166	Stream	4,166	FU	7.20	9.5						94.4	
High	A3HF-4186	Inflow	4,186	FU	7.68	6.5						66.3	
High	A3HF-4250	Stream	4,250	FU	7.52	9.0						95.1	

Table E1. Chemical analyses of low- and high-flow synoptic samples
[Filter: UFA, ultrafiltration, FA, 0.45-micrometer, RA, total recoverable; mg/L, milligrams per liter; ug/L, micrograms per liter; blank cells, no analysis; Sodium bromide injected]

Study	Sample identification	Source	Distance	Filter	pH	Temperature	Calcium	Magnesium	Sodium	Potassium	Alkalinity	Sulfate	Sulfate, icp
			meters			Celcius	mg/L	mg/L	mg/L	mg/L	mg/L as CaCO3	mg/L	mg/L
High	A3HF-4385	Inflow	4,385	FU	4.35	4.0						968	
High	A3HF-WP142	Inflow	4,533	FU	4.42	12.5						3,446	
High	A3HF-4580	Inflow	4,586	FU	4.30	5.0							
High	A3HF-4892	Inflow	4,886	FU	5.37	5.0						973	
High	A3HF-4916	Stream	4,916	FU	7.43	10.0						97.5	
High	A3HF-4951	Inflow	4,951	FU	7.12	5.5						32.5	
High	A3HF-5038	Inflow	5,038	FU	6.14	11.5						1,107	
High	A3HF-5221	Inflow	5,221	FU	7.40	8.5						416	
High	A3HF-5356	Inflow	5,356	FU	4.09	12.5						1,886	
High	A3HF-5536	Stream	5,536	FU	7.36	9.5						101	
High	A3HF-5855	Inflow	5,858	FU	5.97	4.0						75.5	
High	A3HF-6150	Inflow	6,150	FU	4.81	9.0						1,493	
High	A3HF-6745	Stream	6,745	FU	7.32	9.0						106	
High	A3HF-7100	Inflow	7,201	FU	5.36	10.5						452	
High	A3HF-7306	Stream	7,306	FU	7.37	10.0						108	
High	A3HF-7750	Inflow	7,750	FU	3.41	9.0						575	
High	A3HF-7858A	Stream	7,858	FU	7.14	10.0						119	
High	A3HF-7858B	Stream	7,858	FU	7.13	10.0						118	

Table E1. Chemical analyses of low- and high-flow synoptic samples
[Filter: UFA, ultrafiltration, FA, 0.45-micrometer, RA, total recoverable; mg/L, milligrams per liter; ug/L, micrograms per liter; blank cells, no analysis; Sodium bromide injected]

Study	Sample identification	Source	Distance	Filter	Chloride	Bromide	Silica	Aluminum	Arsenic	Barium	Cadmium	Chromium	Cobalt	Copper
			meters		mg/L	mg/L	mg/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Low	A3-3655	Stream	3,655	UFA	.74	.05	7.45	47.4	.16	26.9	.51	.36	.20	15.0
Low	A3-3655	Stream	3,655	FA	.74	.05	8.35	55.5	.15	26.9	.53	.15	.18	11.2
Low	A3-3655	Stream	3,655	RA	.74	.05	7.96	55.8	.16	26.8	.52	.10	.16	2.25
Low	A3-4023	Stream	3,909	UFA	.82	1.22	7.51	47.7	.13	29.2	.52	.32	.16	3.73
Low	A3-4023	Stream	3,909	FA	.82	1.22	8.30	47.3	.13	25.8	.54	.07	.15	1.99
Low	A3-4023	Stream	3,909	RA	.82	1.22	7.87	59.7	.14	25.3	.54	.08	.18	2.03
Low	A3-4161	Inflow	4,033	FA	1.53	.05	9.96	157	.20	6.34	.32	.10	.01	.86
Low	A3-4161	Inflow	4,033	RA	1.53	.05	10.2	47.6	.20	6.37	.34	.16	.03	.57
Low	A3-4166	Stream	4,166	UFA	.83	1.22	7.72	71.3	.16	29.9	.49	.39	.17	14.7
Low	A3-4166	Stream	4,166	FA	.83	1.22	7.81	88.6	.16	28.5	.51	.30	.16	7.60
Low	A3-4166	Stream	4,166	RA	.83	1.22	8.15	66.3	.12	26.2	.52	.12	.16	2.33
Low	A3-4186	Inflow	4,186	UFA	.17	.05	5.43	18.7	.20	35.3	1.11	.28	.01	6.33
Low	A3-4186	Inflow	4,186	FA	.17	.05	5.62	42.2	.17	30.6	1.33	.08	.003	5.61
Low	A3-4186	Inflow	4,186	RA	.17	.05	5.54	15.2	.20	34.5	1.43	.13	.003	5.62
Low	A3-4250A	Stream	4,250	UFA	.71	1.10	7.08	65.7	.20	27.7	.54	.41	.14	18.1
Low	A3-4250A	Stream	4,250	FA	.71	1.10	8.44	52.0	.17	27.9	.70	.13	.16	5.04
Low	A3-4250A	Stream	4,250	RA	.71	1.10	7.57	49.7	.16	28.1	.65	.10	.15	2.51
Low	A3-4250B	Stream	4,250	UFA	.77	1.11	7.49	36.5	.19	27.1	.49	.27	.13	6.23
Low	A3-4250B	Stream	4,250	FA	.77	1.11	8.00	47.2	.20	26.1	.56	.11	.17	4.77
Low	A3-4250B	Stream	4,250	RA	.77	1.11	7.86	52.8	.11	26.6	.62	.10	.13	2.50
Low	A3-4300	Inflow	4,300	FA	10.7	.06	11.0	21.9	.05	18.5	1.83	.23	.02	18.8
Low	A3-4353	Inflow	4,353	FA	21.3	.49	39.7	18,477	.27	18.1	507	.28	53.0	4,019
Low	A3-4385	Inflow	4,385	FU	36.1	.34								
Low	A3-4473	Stream	4,473	UFA	.65	1.06	7.27	35.6	.18	26.3	.62	.32	.13	3.44
Low	A3-4473	Stream	4,473	FA	.65	1.06	7.81	44.8	.11	30.2	.67	.10	.14	3.28
Low	A3-4473	Stream	4,473	RA	.65	1.06	7.54	50.7	.14	27.6	.72	.09	.14	2.93
Low	A3-4520	Inflow	4,520	FA		.05	42.9	27,557	.20	20.3	385	.48	124	1,039
Low	A3-4544	Inflow	4,544	FA	8.07	.05	31.1	16,420	.30	19.9	289	.26	55.7	698
Low	A3-4581	Stream	4,581	UFA	.68	1.04	7.35	40.1	.22	30.3	.70	.48	.16	23.5
Low	A3-4581	Stream	4,581	FA	.68	1.04	8.39	56.7	.16	27.1	.85	.15	.16	12.4
Low	A3-4581	Stream	4,581	RA	.68	1.04	7.78	65.1	.21	25.9	.77	.07	.20	3.04

Table E1. Chemical analyses of low- and high-flow synoptic samples
[Filter: UFA, ultrafiltration, FA, 0.45-micrometer, RA, total recoverable; mg/L, milligrams per liter; ug/L, micrograms per liter; blank cells, no analysis; Sodium bromide injected]

Study	Sample identification	Source	Distance	Filter	Chloride	Bromide	Silica	Aluminum	Arsenic	Barium	Cadmium	Chromium	Cobalt	Copper
			meters		mg/L	mg/L	mg/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Low	A3-4713	Stream	4,713	UFA	.81	1.05	7.60	43.3	.14	27.5	.62	.28	.15	7.90
Low	A3-4713	Stream	4,713	FA	.81	1.05	7.74	51.0	.16	28.5	.75	.12	.15	2.89
Low	A3-4713	Stream	4,713	RA	.81	1.05	7.85	54.2	.12	25.7	.76	.10	.15	2.75
Low	A3-4806	Stream	4,806	UFA	.78	1.04	7.61	60.3	.19	30.4	.70	.19	.18	5.14
Low	A3-4806	Stream	4,806	FA	.78	1.04	7.81	70.3	.15	32.0	.80	.13	.16	6.86
Low	A3-4806	Stream	4,806	RA	.78	1.04	7.58	57.6	.13	27.8	.78	.10	.15	3.16
Low	A3-4886	Inflow	4,886	FU		.05								
Low	A3-4916A	Stream	4,916	FU	.75	1.04								
Low	A3-4916B	Stream	4,916	UFA	.70	1.05	7.59	46.5	.20	25.9	.70	.56	.16	6.11
Low	A3-4916B	Stream	4,916	FA	.70	1.05	8.09	56.6	.10	26.1	.80	.16	.16	3.13
Low	A3-4916B	Stream	4,916	RA	.70	1.05	7.73	60.5	.14	25.8	.83	.11	.17	2.99
Low	A3-4951	Inflow	4,951	FA	.13	.05	5.05	44.5	.16	8.68	.15	.10	.03	2.64
Low	A3-4951	Inflow	4,951	RA	.13	.05	4.72	44.9	.15	8.34	.13	.10	.03	2.48
Low	A3-5016	Stream	5,016	UFA	.69	1.00	7.51	40.4	.18	27.9	.73	.25	.15	12.4
Low	A3-5016	Stream	5,016	FA	.69	1.00	7.52	47.7	.14	31.0	.82	.12	.16	3.40
Low	A3-5016	Stream	5,016	RA	.69	1.00	7.90	65.2	.16	27.5	.82	.15	.16	3.18
Low	A3-5038	Inflow	5,038	UFA	3.23	.05	16.2	314	.33	29.8	13.2	.37	45.9	19.8
Low	A3-5038	Inflow	5,038	FA	3.23	.05	15.9	343	.29	28.0	13.7	.22	48.8	19.6
Low	A3-5038	Inflow	5,038	RA	3.23	.05	16.1	359	.24	26.4	13.2	.11	47.3	21.1
Low	A3-5131	Stream	5,131	UFA	.71	.97	7.54	40.5	.14	28.4	.76	.44	.19	6.97
Low	A3-5131	Stream	5,131	FA	.71	.97	7.96	63.2	.12	28.7	.83	.14	.21	9.63
Low	A3-5131	Stream	5,131	RA	.71	.97	7.86	56.8	.13	27.8	.85	.11	.19	3.01
Low	A3-5161	Inflow	5,161	FA	.42	.05	14.6	21.0	.10	33.8	5.03	.15	.04	2.57
Low	A3-5221	Inflow	5,221	FA	.56	.05	13.1	13.1	.11	40.1	14.9	.12	.06	1.12
Low	A3-5251	Stream	5,251	UFA	.77	.99	7.93	51.7	.20	26.5	.87	.21	.17	2.62
Low	A3-5251	Stream	5,251	FA	.77	.99	7.71	52.1	.16	26.7	.96	.15	.18	3.45
Low	A3-5251	Stream	5,251	RA	.77	.99	7.66	53.9	.14	27.5	1.05	.14	.17	3.05
Low	A3-5269	Inflow	5,269	FU	1.09	.05								
Low	A3-5295	Inflow	5,295	FA	.68	.05	40.0	21,212	1.33	16.0	11.8	4.65	146	692
Low	A3-5306	Stream	5,306	UFA	.70	1.01	7.58	39.1	.15	26.9	.94	.42	.22	2.80
Low	A3-5306	Stream	5,306	FA	.70	1.01	7.89	53.6	.11	26.9	.98	.11	.22	3.07

Table E1. Chemical analyses of low- and high-flow synoptic samples
[Filter: UFA, ultrafiltration, FA, 0.45-micrometer, RA, total recoverable; mg/L, milligrams per liter; ug/L, micrograms per liter; blank cells, no analysis; Sodium bromide injected]

Study	Sample identification	Source	Distance	Filter	Chloride	Bromide	Silica	Aluminum	Arsenic	Barium	Cadmium	Chromium	Cobalt	Copper
			meters		mg/L	mg/L	mg/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Low	A3-5306	Stream	5,306	RA	.70	1.01	7.65	60.1	.16	26.6	1.05	.13	.24	3.81
Low	A3-5356	Inflow	5,356	UFA	1.25	.05	35.0	13,237	.45	15.7	51.1	.39	94.8	1,010
Low	A3-5356	Inflow	5,356	FA	1.25	.05	34.1	13,069	.12	14.8	48.6	.14	91.8	1,007
Low	A3-5356	Inflow	5,356	RA	1.25	.05	38.4	13,410	1.57	21.3	49.2	.42	99.3	1,002
Low	A3-5448	Stream	5,448	UFA	.72	.96	7.95	59.5	.19	26.8	1.09	.24	.36	5.50
Low	A3-5448	Stream	5,448	FA	.72	.96	8.35	63.0	.17	26.6	1.18	.14	.37	4.36
Low	A3-5448	Stream	5,448	RA	.72	.96	7.76	73.2	.11	24.8	1.12	.14	.38	4.74
Low	A3-5536	Stream	5,536	UFA	.84	.96	7.75	39.2	.21	27.6	1.10	.26	.31	6.60
Low	A3-5536	Stream	5,536	FA	.84	.96	7.79	56.2	.15	30.2	1.15	.12	.33	5.19
Low	A3-5536	Stream	5,536	RA	.84	.96	7.91	65.9	.17	27.8	1.14	.13	.31	4.71
Low	A3-5756	Stream	5,756	UFA	.63	.94	7.49	46.8	.31	28.7	1.02	.28	.33	15.5
Low	A3-5756	Stream	5,756	FA	.63	.94	7.86	58.2	.16	26.2	1.12	.13	.35	3.88
Low	A3-5756	Stream	5,756	RA	.63	.94	7.67	65.9	.09	27.1	1.26	.08	.34	4.48
Low	A3-5815	Inflow	5,815	FU	.40	.05								
Low	A3-5858	Inflow	5,858	FA	1.39	1.44	18.1	309	.14	11.2	21.0	.27	.14	68.5
Low	A3-5965	Inflow	5,965	FA	.36	.05	10.9	18.3	.10	50.8	.39	.12	.02	2.55
Low	A3-6038	Stream	6,038	UFA	.76	.95	7.42	41.8	.23	28.5	1.08	.49	.33	14.2
Low	A3-6038	Stream	6,038	FA	.76	.95	8.13	54.8	.19	25.9	1.14	.12	.31	3.49
Low	A3-6038	Stream	6,038	RA	.76	.95	7.91	69.3	.11	26.7	1.16	.17	.30	4.48
Low	A3-6126	Stream	6,126	UFA	.77	.98	7.30	40.0	.16	28.8	1.05	.24	.32	2.44
Low	A3-6126	Stream	6,126	FA	.77	.98	8.29	65.4	.16	26.7	1.21	.11	.30	3.61
Low	A3-6126	Stream	6,126	RA	.77	.98	7.73	67.8	.15	27.7	1.25	.14	.35	4.72
Low	A3-6131	Inflow	6,131	FA	.59	.11	11.1	18.6	.08	37.1	1.33	.15	.33	1.84
Low	A3-6131	Inflow	6,131	RA	.59	.11	11.3	59.8	.08	32.5	1.34	.17	.35	1.78
Low	A3-6150	Inflow	6,150	UFA	1.71	.05	26.8	10,971	.24	32.5	91.1	.45	147	427
Low	A3-6150	Inflow	6,150	FA	1.71	.05	26.2	11,697	.06	29.4	89.8	.12	151	444
Low	A3-6150	Inflow	6,150	RA	1.71	.05	28.1	10,698	.03	30.9	91.1	.39	156	455
Low	A3-6265	Stream	6,265	UFA	.79	.96	7.60	52.6	.18	29.4	1.28	.26	.53	4.18
Low	A3-6265	Stream	6,265	FA	.79	.96	7.96	60.3	.11	24.8	1.27	.15	.51	3.74
Low	A3-6265	Stream	6,265	RA	.79	.96	7.79	77.8	.19	25.9	1.37	.17	.57	4.59
Low	A3-6465	Stream	6,465	UFA	.81	.95	7.87	47.1	.14	29.8	1.38	.30	.58	4.70

Table E1. Chemical analyses of low- and high-flow synoptic samples
[Filter: UFA, ultrafiltration, FA, 0.45-micrometer, RA, total recoverable; mg/L, milligrams per liter; ug/L, micrograms per liter; blank cells, no analysis; Sodium bromide injected]

Study	Sample identification	Source	Distance	Filter	Chloride	Bromide	Silica	Aluminum	Arsenic	Barium	Cadmium	Chromium	Cobalt	Copper
			meters		mg/L	mg/L	mg/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Low	A3-6465	Stream	6,465	FA	.81	.95	8.14	64.7	.11	27.0	1.34	.13	.56	4.42
Low	A3-6465	Stream	6,465	RA	.81	.95	7.81	83.7	.11	27.3	1.46	.09	.61	4.80
Low	A3-6745	Stream	6,745	UFA	.90	.95	7.58	39.1	.28	27.2	1.20	.27	.53	3.01
Low	A3-6745	Stream	6,745	FA	.90	.95	7.57	59.4	.15	30.2	1.42	.11	.55	4.14
Low	A3-6745	Stream	6,745	RA	.90	.95	8.06	80.0	.12	25.0	1.42	.12	.55	4.40
Low	A3-6994	Stream	6,994	UFA	.74	.98	7.48	157	.21	26.1	1.35	.29	.50	8.51
Low	A3-6994	Stream	6,994	FA	.74	.98	8.33	80.0	.14	25.0	1.37	.09	.63	5.60
Low	A3-6994	Stream	6,994	RA	.74	.98	8.26	80.5						
Low	A3-7049	Inflow	7,049	FA	1.51	.05	15.8	930	.13	57.5	45.4	.11	.17	71.4
Low	A3-7177	Stream	7,177	UFA	.67	.94	7.78	38.7	.19	26.2	1.50	.16	.51	6.36
Low	A3-7177	Stream	7,177	FA	.67	.94	8.28	61.0	.17	27.1	1.82	.08	.62	4.27
Low	A3-7177	Stream	7,177	RA	.67	.94	7.91	76.2	.10	29.9	1.85	.06	.57	4.81
Low	A3-7201	Inflow	7,201	FA	.27	.05	13.1	16.7	.21	32.7	.19	.07	.32	3.04
Low	A3-7201	Inflow	7,201	RA	.27	.05	11.8	22.4	.18	33.3	.06	.07	.01	1.05
Low	A3-7306	Stream	7,306	UFA	.82	.95	8.08	45.9	.21	28.7	2.09	.30	.58	11.2
Low	A3-7306	Stream	7,306	FA	.82	.95	8.29	64.2	.14	29.6	2.19	.16	.59	5.85
Low	A3-7306	Stream	7,306	RA	.82	.95	7.75	74.3	.13	26.7	2.14	.07	.53	4.58
Low	A3-7585	Stream	7,585	UFA	.82	.95	7.94	40.0	.24	31.9	1.96	.20	.53	5.45
Low	A3-7585	Stream	7,585	FA	.82	.95	8.02	57.2	.15	27.8	2.03	.09	.56	5.24
Low	A3-7585	Stream	7,585	RA	.82	.95	7.65	72.1	.10	26.2	1.98	.11	.55	4.45
Low	A3-7750	Inflow	7,750	UFA	8.49	.17	18.3	546	.30	52.2	40.5	.38	3.41	45.2
Low	A3-7750	Inflow	7,750	FA	8.49	.17	17.9	568	.21	46.2	39.7	.09	3.25	44.9
Low	A3-7750	Inflow	7,750	RA	8.49	.17	21.1	613	.17	43.0	41.3	.07	3.71	45.2
Low	A3-7858	Stream	7,858	UFA	.82	.94	7.79	35.0	.14	26.4	1.89	.20	.50	3.93
Low	A3-7858	Stream	7,858	FA	.82	.94	8.34	62.8	.10	27.4	1.93	.07	.52	4.21
Low	A3-7858	Stream	7,858	RA	.82	.94	8.15	79.0	.11	27.0	2.06	.08	.59	4.41
High	A3HF-4023	Stream	3,909	FU	1.19	1.11								
High	A3HF-4161	Inflow	4,033	FU	.90									
High	A3HF-4166	Stream	4,166	FU	1.20	1.13								
High	A3HF-4186	Inflow	4,186	FU	.28									
High	A3HF-4250	Stream	4,250	FU	1.20	1.08								

Table E1. Chemical analyses of low- and high-flow synoptic samples
[Filter: UFA, ultrafiltration, FA, 0.45-micrometer, RA, total recoverable; mg/L, milligrams per liter; ug/L, micrograms per liter; blank cells, no analysis; Sodium bromide injected]

Study	Sample identification	Source	Distance	Filter	Chloride	Bromide	Silica	Aluminum	Arsenic	Barium	Cadmium	Chromium	Cobalt	Copper
			meters		mg/L	mg/L	mg/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
High	A3HF-4385	Inflow	4,385	FU	7.15	.13								
High	A3HF-WP142	Inflow	4,533	FU	26.6									
High	A3HF-4580	Inflow	4,586	FU										
High	A3HF-4892	Inflow	4,886	FU	5.17									
High	A3HF-4916	Stream	4,916	FU	1.17	1.06								
High	A3HF-4951	Inflow	4,951	FU	.36									
High	A3HF-5038	Inflow	5,038	FU	2.21									
High	A3HF-5221	Inflow	5,221	FU	.50									
High	A3HF-5356	Inflow	5,356	FU	1.46									
High	A3HF-5536	Stream	5,536	FU	1.19	.99								
High	A3HF-5855	Inflow	5,858	FU	.53									
High	A3HF-6150	Inflow	6,150	FU	1.20									
High	A3HF-6745	Stream	6,745	FU	1.08	.96								
High	A3HF-7100	Inflow	7,201	FU	1.53									
High	A3HF-7306	Stream	7,306	FU	1.14	.95								
High	A3HF-7750	Inflow	7,750	FU	12.0	.05								
High	A3HF-7858A	Stream	7,858	FU	1.41	.90								
High	A3HF-7858B	Stream	7,858	FU	1.39	.91								

Table E1. Chemical analyses of low- and high-flow synoptic samples
[Filter: UFA, ultrafiltration, FA, 0.45-micrometer, RA, total recoverable; mg/L, milligrams per liter; ug/L, micrograms per liter; blank cells, no analysis; Sodium bromide injected]

Study	Sample identification	Source	Distance	Filter	Iron	Lead	Lithium	Manganese	Molybdenum	Nickel	Strontium	Vanadiaum	Zinc
			meters		ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Low	A3-3655	Stream	3,655	UFA	14.5	2.40	6.97	184	1.30	.72	511	.05	203
Low	A3-3655	Stream	3,655	FA	23.2	2.40	5.21	206	1.35	.47	539	.03	185
Low	A3-3655	Stream	3,655	RA	36.6	1.08	6.76	180	1.25	.28	488	.04	187
Low	A3-4023	Stream	3,909	UFA	2.42	1.22	7.50	176	1.50	.45	525	.04	187
Low	A3-4023	Stream	3,909	FA	21.1	1.07	8.82	179	1.37	.26	482	.03	168
Low	A3-4023	Stream	3,909	RA	50.5	.82	8.50	265	1.36	.29	527	.03	201
Low	A3-4161	Inflow	4,033	FA	1.84	1.14	11.3	.09	2.10	.07	579	.07	71.1
Low	A3-4161	Inflow	4,033	RA	46.5	.61	15.3	171	1.99	.09	551	.14	95.1
Low	A3-4166	Stream	4,166	UFA	9.20	4.75	9.16	173	1.42	.80	577	.05	206
Low	A3-4166	Stream	4,166	FA	23.6	3.22	7.42	174	1.45	1.08	533	.04	169
Low	A3-4166	Stream	4,166	RA	51.8	.94	8.57	194	1.37	.27	528	.04	210
Low	A3-4186	Inflow	4,186	UFA	6.56	3.89	10.7	1.20	8.47	.50	592	.04	141
Low	A3-4186	Inflow	4,186	FA	5.39	2.40	10.0	475	7.94	.10	600	.02	210
Low	A3-4186	Inflow	4,186	RA	3.62	2.00	11.2	LD	8.42	.06	592	.03	173
Low	A3-4250A	Stream	4,250	UFA	12.5	11.0	12.7	148	2.05	4.55	534	.05	194
Low	A3-4250A	Stream	4,250	FA	22.1	3.47	9.79	172	2.15	.32	550	.04	186
Low	A3-4250A	Stream	4,250	RA	33.2	.97	8.82	151	2.14	.25	549	.04	181
Low	A3-4250B	Stream	4,250	UFA	2.92	1.91	8.59	153	2.15	.31	527	.04	134
Low	A3-4250B	Stream	4,250	FA	53.2	2.16	9.32	163	2.05	.88	579	.03	163
Low	A3-4250B	Stream	4,250	RA	32.7	1.31	8.37	154	2.03	.24	522	.03	181
Low	A3-4300	Inflow	4,300	FA	4.52	1.17	28.1	11.2	.89	1.11	1,047	.03	865
Low	A3-4353	Inflow	4,353	FA	85.7	905	226	59,402	.05	93.0	1,157	.04	128,281
Low	A3-4385	Inflow	4,385	FU									
Low	A3-4473	Stream	4,473	UFA	4.69	3.93	8.52	188	2.12	.29	514	.03	162
Low	A3-4473	Stream	4,473	FA	19.5	1.85	7.16	187	2.40	.31	568	.03	181
Low	A3-4473	Stream	4,473	RA	31.0	1.07	8.65	183	2.15	.26	519	.04	194
Low	A3-4520	Inflow	4,520	FA	43.6	61.9	142	781,007	.09	234	1,456	.04	97,395
Low	A3-4544	Inflow	4,544	FA	45.2	12.4	90.0	575,310	.06	161	1,371	.05	69,791
Low	A3-4581	Stream	4,581	UFA	4.42	3.57	12.7	261	2.34	.88	576	.05	237
Low	A3-4581	Stream	4,581	FA	24.2	3.36	10.5	302	2.21	.55	543	.04	241
Low	A3-4581	Stream	4,581	RA	38.5	1.08	9.12	347	2.13	.33	537	.04	223

Table E1. Chemical analyses of low- and high-flow synoptic samples
[Filter: UFA, ultrafiltration, FA, 0.45-micrometer, RA, total recoverable; mg/L, milligrams per liter; ug/L, micrograms per liter; blank cells, no analysis; Sodium bromide injected]

Study	Sample identification	Source	Distance	Filter	Iron	Lead	Lithium	Manganese	Molybdenum	Nickel	Strontium	Vanadiaum	Zinc
			meters		ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Low	A3-4713	Stream	4,713	UFA	11.6	7.70	8.74	263	2.21	.49	528	.03	220
Low	A3-4713	Stream	4,713	FA	19.0	1.78	8.26	263	2.23	.31	527	.03	218
Low	A3-4713	Stream	4,713	RA	31.4	1.03	8.46	265	2.14	.30	511	.03	219
Low	A3-4806	Stream	4,806	UFA	14.2	1.80	12.4	302	2.44	.61	573	.05	202
Low	A3-4806	Stream	4,806	FA	70.0	3.51	8.28	283	2.48	.47	562	.04	253
Low	A3-4806	Stream	4,806	RA	33.3	1.07	8.73	263	2.17	.31	515	.03	228
Low	A3-4886	Inflow	4,886	FU									
Low	A3-4916A	Stream	4,916	FU									
Low	A3-4916B	Stream	4,916	UFA	19.3	11.4	9.67	756	2.41	.47	533	.04	245
Low	A3-4916B	Stream	4,916	FA	21.2	2.65	7.00	798	2.08	.44	556	.03	249
Low	A3-4916B	Stream	4,916	RA	36.2	1.16	7.76	769	2.17	.42	563	.03	272
Low	A3-4951	Inflow	4,951	FA	4.85	1.06	3.20	556	1.38	.10	247	.03	84.1
Low	A3-4951	Inflow	4,951	RA	10.7	.42	3.63	49.6	1.37	.13	238	.03	32.2
Low	A3-5016	Stream	5,016	UFA	6.10	2.58	8.88	433	2.32	.53	540	.05	219
Low	A3-5016	Stream	5,016	FA	20.4	1.80	8.20	434	2.43	.38	537	.03	260
Low	A3-5016	Stream	5,016	RA	32.3	1.05	8.70	444	2.06	.34	512	.03	254
Low	A3-5038	Inflow	5,038	UFA	1,336	14.1	43.5	227,526	1.50	37.1	2,941	.08	12,918
Low	A3-5038	Inflow	5,038	FA	1,291	14.1	37.6	224,036	1.37	38.0	2,921	.03	12,417
Low	A3-5038	Inflow	5,038	RA	1,553	21.6	45.8	222,280	1.31	35.8	3,075	.02	12,442
Low	A3-5131	Stream	5,131	UFA	4.99	1.92	11.9	555	2.27	.51	583	.04	249
Low	A3-5131	Stream	5,131	FA	27.9	3.55	7.66	607	2.17	.44	513	.03	265
Low	A3-5131	Stream	5,131	RA	30.3	1.10	9.38	585	2.09	.40	531	.03	261
Low	A3-5161	Inflow	5,161	FA	6.49	1.60	8.40	71.2	4.76	.72	1,661	.02	1,066
Low	A3-5221	Inflow	5,221	FA	8.70	1.54	8.06	22.3	7.61	.74	1,548	.09	3,289
Low	A3-5251	Stream	5,251	UFA	342	4.73	8.34	554	2.03	.37	533	.04	264
Low	A3-5251	Stream	5,251	FA	19.1	1.56	6.38	592	2.14	.37	510	.03	259
Low	A3-5251	Stream	5,251	RA	33.7	1.12	8.51	547	2.15	.40	556	.04	293
Low	A3-5269	Inflow	5,269	FU									
Low	A3-5295	Inflow	5,295	FA	163,103	525	41.0	7,284	.42	106	628	.40	2,958
Low	A3-5306	Stream	5,306	UFA	5.11	3.25	8.70	614	2.21	.48	554	.03	346
Low	A3-5306	Stream	5,306	FA	19.9	2.52	8.10	616	2.02	.37	502	.03	283

Table E1. Chemical analyses of low- and high-flow synoptic samples
[Filter: UFA, ultrafiltration, FA, 0.45-micrometer, RA, total recoverable; mg/L, milligrams per liter; ug/L, micrograms per liter; blank cells, no analysis; Sodium bromide injected]

Study	Sample identification	Source	Distance	Filter	Iron	Lead	Lithium	Manganese	Molybdenum	Nickel	Strontium	Vanadiaum	Zinc
			meters		ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Low	A3-5306	Stream	5,306	RA	32.1	1.27	8.43	604	2.29	.41	598	.03	310
Low	A3-5356	Inflow	5,356	UFA	18,143	1,126	77.6	84,628	.01	57.0	3,020	.07	18,009
Low	A3-5356	Inflow	5,356	FA	18,857	1,105	69.1	89,683	.00	53.5	2,876	.01	17,285
Low	A3-5356	Inflow	5,356	RA	21,227	1,259	69.8	85,253	.47	56.7	2,868	1.10	17,899
Low	A3-5448	Stream	5,448	UFA	7.80	2.84	12.4	799	2.05	.53	528	.04	387
Low	A3-5448	Stream	5,448	FA	25.4	2.31	3.38	820	2.15	.53	546	.03	363
Low	A3-5448	Stream	5,448	RA	41.0	1.82	8.12	783	1.93	.52	542	.03	361
Low	A3-5536	Stream	5,536	UFA	9.94	2.67	10.8	712	1.92	.93	530	.04	403
Low	A3-5536	Stream	5,536	FA	23.7	2.09	7.71	718	2.27	.48	538	.03	389
Low	A3-5536	Stream	5,536	RA	47.0	1.71	8.30	697	1.89	.45	533	.03	360
Low	A3-5756	Stream	5,756	UFA	10.6	11.4	13.6	667	2.23	1.03	587	.08	320
Low	A3-5756	Stream	5,756	FA	22.2	1.65	8.40	765	2.16	.51	585	.03	374
Low	A3-5756	Stream	5,756	RA	37.1	1.78	8.85	695	2.04	.58	547	.03	396
Low	A3-5815	Inflow	5,815	FU									
Low	A3-5858	Inflow	5,858	FA	2.02	.36	53.8	21,915	.06	24.1	964	.02	4,438
Low	A3-5965	Inflow	5,965	FA	6.69	.24	6.34	11.8	.76	.69	1,143	.03	189
Low	A3-6038	Stream	6,038	UFA	21.7	16.5	8.99	687	2.19	.99	598	.05	387
Low	A3-6038	Stream	6,038	FA	20.0	3.02	6.39	718	1.99	.53	551	.02	361
Low	A3-6038	Stream	6,038	RA	42.8	1.90	7.74	704	1.84	.47	517	.03	384
Low	A3-6126	Stream	6,126	UFA	5.71	3.65	8.29	744	2.14	.54	581	.03	323
Low	A3-6126	Stream	6,126	FA	20.5	4.20	6.54	783	2.01	.53	551	.02	381
Low	A3-6126	Stream	6,126	RA	39.5	1.85	9.44	798	2.10	.83	568	.03	429
Low	A3-6131	Inflow	6,131	FA	2.86	.44	7.12	129	1.45	.38	1,626	.03	493
Low	A3-6131	Inflow	6,131	RA	51.7	.63	7.16	131	1.40	.30	1,529	.07	502
Low	A3-6150	Inflow	6,150	UFA	13,221	441	70.4	180,912	.19	97.2	1,525	.05	24,917
Low	A3-6150	Inflow	6,150	FA	12,963	414	70.4	176,564	.16	98.5	1,545	.01	23,131
Low	A3-6150	Inflow	6,150	RA	13,090	478	81.5	175,962	.24	99.8	1,490	.05	25,320
Low	A3-6265	Stream	6,265	UFA	9.10	4.98	12.6	1,169	2.05	.81	573	.04	456
Low	A3-6265	Stream	6,265	FA	20.4	1.12	7.50	1,077	1.88	.72	530	.02	425
Low	A3-6265	Stream	6,265	RA	70.3	1.92	8.34	1,063	1.99	.70	542	.02	472
Low	A3-6465	Stream	6,465	UFA	8.03	6.37	10.2	1,224	2.20	.85	552	.04	481

Table E1. Chemical analyses of low- and high-flow synoptic samples
[Filter: UFA, ultrafiltration, FA, 0.45-micrometer, RA, total recoverable; mg/L, milligrams per liter; ug/L, micrograms per liter; blank cells, no analysis; Sodium bromide injected]

Study	Sample identification	Source	Distance	Filter	Iron	Lead	Lithium	Manganese	Molybdenum	Nickel	Strontium	Vanadiaum	Zinc
			meters		ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Low	A3-6465	Stream	6,465	FA	39.6	2.19	8.20	1,261	2.01	.77	539	.03	450
Low	A3-6465	Stream	6,465	RA	76.5	2.30	8.88	1,295	2.03	.77	547	.03	519
Low	A3-6745	Stream	6,745	UFA	10.5	5.18	8.50	1,126	2.12	.92	566	.04	410
Low	A3-6745	Stream	6,745	FA	35.4	1.49	7.18	1,169	2.25	.90	570	.02	438
Low	A3-6745	Stream	6,745	RA	66.7	1.86	7.94	1,184	1.92	.82	546	.02	481
Low	A3-6994	Stream	6,994	UFA	5.68	3.25	9.52	1,163	1.88	1.41	533	.03	464
Low	A3-6994	Stream	6,994	FA	89.1	2.30	8.85	1,230	1.96	1.44	623	.02	491
Low	A3-6994	Stream	6,994	RA	68.9			1,224					526
Low	A3-7049	Inflow	7,049	FA	6.37	3.71	18.7	9,567	.04	24.5	1,607	.03	9,337
Low	A3-7177	Stream	7,177	UFA	7.09	2.79	10.1	1,200	1.98	.97	550	.04	518
Low	A3-7177	Stream	7,177	FA	34.8	1.31	10.8	1,256	2.19	.96	606	.03	488
Low	A3-7177	Stream	7,177	RA	61.9	1.83	9.43	1,241	2.05	.84	555	.03	550
Low	A3-7201	Inflow	7,201	FA	18.2	1.43	1.96	206	4.49	.23	415	.04	39.4
Low	A3-7201	Inflow	7,201	RA	24.4	1.36	1.60	2.99	4.20	.13	426	.04	27.3
Low	A3-7306	Stream	7,306	UFA	13.7	4.63	9.90	1,417	2.07	3.18	613	.04	669
Low	A3-7306	Stream	7,306	FA	36.9	2.18	8.50	1,450	2.09	2.43	615	.02	573
Low	A3-7306	Stream	7,306	RA	61.5	1.70	8.50	1,406	1.84	1.02	567	.03	622
Low	A3-7585	Stream	7,585	UFA	9.64	4.50	11.1	1,344	2.25	1.05	598	.05	623
Low	A3-7585	Stream	7,585	FA	31.2	1.64	4.11	1,378	1.96	1.02	574	.02	561
Low	A3-7585	Stream	7,585	RA	60.5	1.76	8.56	1,374	2.03	.96	630	.03	608
Low	A3-7750	Inflow	7,750	UFA	183	3.35	46.3	73,476	.24	28.7	4,352	.06	7,481
Low	A3-7750	Inflow	7,750	FA	184	2.99	39.6	73,268	.19	25.8	3,959	.03	7,373
Low	A3-7750	Inflow	7,750	RA	267	3.66	46.4	75,078	.19	27.0	4,126	.01	7,821
Low	A3-7858	Stream	7,858	UFA	1.78	.41	10.6	1,387	1.80	1.40	555	.02	606
Low	A3-7858	Stream	7,858	FA	31.0	1.37	8.27	1,389	1.78	1.34	537	.02	568
Low	A3-7858	Stream	7,858	RA	64.6	1.62	9.21	1,528	1.99	.96	573	.03	625
High	A3HF-4023	Stream	3,909	FU									
High	A3HF-4161	Inflow	4,033	FU									
High	A3HF-4166	Stream	4,166	FU									
High	A3HF-4186	Inflow	4,186	FU									
High	A3HF-4250	Stream	4,250	FU									

Table E1. Chemical analyses of low- and high-flow synoptic samples
[Filter: UFA, ultrafiltration, FA, 0.45-micrometer, RA, total recoverable; mg/L, milligrams per liter; ug/L, micrograms per liter; blank cells, no analysis; Sodium bromide injected]

Study	Sample identification	Source	Distance	Filter	Iron	Lead	Lithium	Manganese	Molybdenum	Nickel	Strontium	Vanadiaum	Zinc
			meters		ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
High	A3HF-4385	Inflow	4,385	FU									
High	A3HF-WP142	Inflow	4,533	FU									
High	A3HF-4580	Inflow	4,586	FU									
High	A3HF-4892	Inflow	4,886	FU									
High	A3HF-4916	Stream	4,916	FU									
High	A3HF-4951	Inflow	4,951	FU									
High	A3HF-5038	Inflow	5,038	FU									
High	A3HF-5221	Inflow	5,221	FU									
High	A3HF-5356	Inflow	5,356	FU									
High	A3HF-5536	Stream	5,536	FU									
High	A3HF-5855	Inflow	5,858	FU									
High	A3HF-6150	Inflow	6,150	FU									
High	A3HF-6745	Stream	6,745	FU									
High	A3HF-7100	Inflow	7,201	FU									
High	A3HF-7306	Stream	7,306	FU									
High	A3HF-7750	Inflow	7,750	FU									
High	A3HF-7858A	Stream	7,858	FU									
High	A3HF-7858B	Stream	7,858	FU									

Table E2. Chemical analyses of high-flow temporal samples, Animas River, April 2003
[Filter: FA, 0.45-micrometer, RA, total recoverable; L/s, liters per second; mg/L, milligrams per liter; ug/L, micrograms per liter; Sodium bromide injected tracer]

Site	Distance	Time	Filter	Discharge	Calcium	Magnesium	Sodium	Potassium	Sulfate	Chloride	Bromide	Sulfate, ICP
	meters			L/s	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
AMIN-4166	4166	4/16/03 13:00	FA	1,289	45.3	2.79	2.21	.59	92.8	1.34	1.29	94.5
AMIN-4166	4166	4/16/03 13:00	RA	1,289	41.6	2.69	2.31	.60	92.8	1.34	1.29	82.4
AMIN-4166	4166	4/16/03 14:00	FA	1,423	42.6	2.81	2.34	.57	92.8	1.30	1.17	89.6
AMIN-4166	4166	4/16/03 14:00	RA	1,423	41.1	2.69	2.24	.57	92.8	1.30	1.17	84.0
AMIN-4166	4166	4/16/03 15:00	FA	1,473	40.2	2.75	2.22	.57	94.8	1.25	1.13	85.6
AMIN-4166	4166	4/16/03 15:00	RA	1,473	41.8	2.80	2.21	.60	94.8	1.25	1.13	90.3
AMIN-4166	4166	4/16/03 16:00	FA	1,508	40.6	2.67	2.18	.57	99.3	1.28	1.10	87.4
AMIN-4166	4166	4/16/03 16:00	RA	1,508	42.1	2.78	2.17	.60	99.3	1.28	1.10	87.7
AMIN-4166	4166	4/17/03 8:37	FA	1,316	43.1	2.74	2.33	.55	95.4	1.30	1.26	87.7
AMIN-4166	4166	4/17/03 8:37	RA	1,316	44.1	2.73	2.32	.58	95.4	1.30	1.26	86.4
AMIN-4166	4166	4/17/03 9:48	FA	1,289	42.7	2.71	2.31	.53	96.4	1.31	1.29	85.6
AMIN-4166	4166	4/17/03 9:48	RA	1,289	43.8	2.85	2.33	.52	96.4	1.31	1.29	89.1
AMIN-4166	4166	4/17/03 11:01	FA	1,287	42.7	2.87	2.35	.49	96.5	1.37	1.29	90.0
AMIN-4166	4166	4/17/03 11:01	RA	1,287	42.6	2.65	2.28	.53	96.5	1.37	1.29	85.5
AMIN-4166	4166	4/17/03 11:59	FA	1,336	43.3	2.68	2.26	.51	97.7	1.34	1.24	88.0
AMIN-4166	4166	4/17/03 11:59	RA	1,336	43.2	2.75	2.30	.51	97.7	1.34	1.24	90.2
AMIN-4166	4166	4/17/03 13:55	FA	1,405	40.9	2.60	2.15	.53	96.4	1.22	1.19	83.3
AMIN-4166	4166	4/17/03 13:55	RA	1,405	42.1	2.69	2.19	.52	96.4	1.22	1.19	89.1
AMIN-4916	4916	4/16/03 13:00	FA	1,348	41.9	2.66	2.29	.57	96.1	1.30	1.23	87.6
AMIN-4916	4916	4/16/03 13:00	RA	1,348	41.5	2.79	2.29	.56	96.1	1.30	1.23	90.1
AMIN-4916	4916	4/16/03 14:00	FA	1,501	40.5	2.65	2.17	.54	97.9	1.22	.88	88.8
AMIN-4916	4916	4/16/03 14:00	RA	1,501	42.0	2.81	2.26	.59	97.9	1.22	.88	90.5
AMIN-4916	4916	4/16/03 16:00	FA	1,638	40.4	2.76	2.20	.57	94.9	1.27	1.01	89.8
AMIN-4916	4916	4/16/03 16:00	RA	1,638	41.6	2.76	2.16	.55	94.9	1.27	1.01	87.1
AMIN-4916	4916	4/16/03 17:00	FA	1,721	41.3	2.74	2.18	.57	95.7	1.29	.96	87.8
AMIN-4916	4916	4/16/03 17:00	RA	1,721	41.5	2.66	2.17	.55	95.7	1.29	.96	82.6
AMIN-4916	4916	4/16/03 18:00	FA	1,748	39.5	2.69	2.14	.57	93.1	1.23	.95	87.8
AMIN-4916	4916	4/16/03 18:00	RA	1,748	41.6	2.67	2.15	.53	93.1	1.23	.95	85.2
AMIN-4916	4916	4/16/03 19:00	FA	1,782	41.6	2.69	2.20	.55	93.5	1.29	.93	86.9
AMIN-4916	4916	4/16/03 19:00	RA	1,782	40.7	2.73	2.07	.60	93.5	1.29	.93	87.3
AMIN-4916	4916	4/16/03 20:00	FA	1,705	39.9	2.59	2.09	.58	93.4	1.23	.97	83.7
AMIN-4916	4916	4/16/03 20:00	RA	1,705	40.7	2.68	2.10	.59	93.4	1.23	.97	84.8
AMIN-4916	4916	4/16/03 21:00	FA	1,689	40.6	2.60	2.10	.58	94.4	1.26	.98	83.1

Table E2. Chemical analyses of high-flow temporal samples, Animas River, April 2003
[Filter: FA, 0.45-micrometer, RA, total recoverable; L/s, liters per second; mg/L, milligrams per liter; ug/L, micrograms per liter; Sodium bromide injected tracer]

Site	Distance	Time	Filter	Discharge	Calcium	Magnesium	Sodium	Potassium	Sulfate	Chloride	Bromide	Sulfate, ICP
	meters			L/s	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
AMIN-4916	4916	4/16/03 21:00	RA	1,689	41.0	2.67	2.15	.54	94.4	1.26	.98	86.8
AMIN-4916	4916	4/16/03 22:00	FA	1,638	41.5	2.71	2.20	.59	90.3	1.23	.98	89.1
AMIN-4916	4916	4/16/03 22:00	RA	1,638	41.3	2.68	2.12	.54	90.3	1.23	.98	85.5
AMIN-4916	4916	4/16/03 23:00	FA	1,562	41.1	2.65	2.15	.57	93.8	1.23	1.03	85.2
AMIN-4916	4916	4/16/03 23:00	RA	1,562	41.1	2.70	2.18	.54	93.8	1.23	1.03	85.8
AMIN-4916	4916	4/17/03 0:00	FA	1,638	40.5	2.69	2.14	.52	90.8	1.19	.98	86.7
AMIN-4916	4916	4/17/03 0:00	RA	1,638	41.3	2.62	2.18	.53	90.8	1.19	.98	85.5
AMIN-4916	4916	4/17/03 1:00	FA	1,582	42.1	2.68	2.22	.56	94.1	1.12	1.04	87.2
AMIN-4916	4916	4/17/03 1:00	RA	1,582	40.2	2.68	2.16	.50	94.1	1.12	1.04	86.8
AMIN-4916	4916	4/17/03 8:50	FA	1,396	44.2	2.78	2.31	.49	98.4	1.27	1.19	88.9
AMIN-4916	4916	4/17/03 8:50	RA	1,396	43.6	2.78	2.32	.55	98.4	1.27	1.19	88.8
AMIN-4916	4916	4/17/03 9:57	FA	1,358	43.2	2.82	2.31	.51	99.0	1.27	1.22	90.8
AMIN-4916	4916	4/17/03 9:57	RA	1,358	44.2	2.86	2.37	.54	99.0	1.27	1.22	90.8
AMIN-4916	4916	4/17/03 11:08	FA	1,388	43.6	2.74	2.32	.55	99.1	1.32	1.20	89.4
AMIN-4916	4916	4/17/03 11:08	RA	1,388	45.3	2.90	2.38	.53	99.1	1.32	1.20	94.0
AMIN-4916	4916	4/17/03 12:06	FA	1,399	41.9	2.67	2.25	.49	99.9	1.32	1.19	86.8
AMIN-4916	4916	4/17/03 12:06	RA	1,399	43.4	2.76	2.34	.53	99.9	1.32	1.19	92.0
AMIN-4916	4916	4/17/03 14:02	FA	1,552	41.5	2.76	2.25	.59	99.7	1.24	1.07	88.7
AMIN-4916	4916	4/17/03 14:02	RA	1,552	42.7	2.73	2.23	.56	99.7	1.24	1.07	87.7
AMIN-5536	5536	4/16/03 13:00	FA	1,351	41.7	2.72	2.25	.54	100	1.32	1.16	87.7
AMIN-5536	5536	4/16/03 13:00	RA	1,351	43.7	2.82	2.34	.58	100	1.32	1.16	95.1
AMIN-5536	5536	4/16/03 14:00	FA	1,294	44.8	2.79	2.31	.52	102	1.46	1.28	94.1
AMIN-5536	5536	4/16/03 14:00	RA	1,294	43.0	2.76	2.23	.61	102	1.46	1.28	91.5
AMIN-5536	5536	4/16/03 15:00	FA	1,658	42.1	2.69	2.20	.53	101	1.22	1.00	89.3
AMIN-5536	5536	4/16/03 15:00	RA	1,658	42.1	2.71	2.20	.64	101	1.22	1.00	91.4
AMIN-5536	5536	4/16/03 16:00	FA	1,686	42.2	2.69	2.15	.57	99.4	1.25	.98	92.1
AMIN-5536	5536	4/16/03 16:00	RA	1,686	42.0	2.71	2.14	.65	99.4	1.25	.98	92.5
AMIN-5536	5536	4/16/03 17:00	FA	1,765	41.0	2.65	2.09	.52	97.5	1.19	.94	89.6
AMIN-5536	5536	4/16/03 17:00	RA	1,765	40.7	2.67	2.12	.57	97.5	1.19	.94	90.0
AMIN-5536	5536	4/16/03 18:00	FA	1,794	39.6	2.61	2.10	.54	97.3	1.29	.93	87.8
AMIN-5536	5536	4/16/03 18:00	RA	1,794	42.8	2.78	2.20	.61	97.3	1.29	.93	91.2
AMIN-5536	5536	4/16/03 19:00	FA	1,870	38.9	2.56	2.04	.52	93.6	1.25	.89	84.8
AMIN-5536	5536	4/16/03 19:00	RA	1,870	41.0	2.62	2.07	.59	93.6	1.25	.89	86.6

Table E2. Chemical analyses of high-flow temporal samples, Animas River, April 2003
[Filter: FA, 0.45-micrometer, RA, total recoverable; L/s, liters per second; mg/L, milligrams per liter; ug/L, micrograms per liter; Sodium bromide injected tracer]

Site	Distance	Time	Filter	Discharge	Calcium	Magnesium	Sodium	Potassium	Sulfate	Chloride	Bromide	Sulfate, ICP
	meters			L/s	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
AMIN-5536	5536	4/16/03 20:00	FA	1,815	40.0	2.58	2.12	.55	96.2	1.24	.91	84.7
AMIN-5536	5536	4/16/03 20:00	RA	1,815	40.5	2.64	2.06	.59	96.2	1.24	.91	87.8
AMIN-5536	5536	4/16/03 21:00	FA	1,716	41.3	2.71	2.11	.55	98.5	1.24	.97	88.5
AMIN-5536	5536	4/16/03 21:00	RA	1,716	41.5	2.71	2.13	.65	98.5	1.24	.97	88.9
AMIN-5536	5536	4/16/03 22:00	FA	1,754	41.0	2.63	2.10	.55	96.9	1.23	.95	87.6
AMIN-5536	5536	4/16/03 22:00	RA	1,754	42.4	2.70	2.14	.57	96.9	1.23	.95	89.9
AMIN-5536	5536	4/16/03 23:00	FA	1,714	41.0	2.73	2.14	.53	97.4	1.24	.97	89.9
AMIN-5536	5536	4/16/03 23:00	RA	1,714	41.2	2.73	2.14	.65	97.4	1.24	.97	90.4
AMIN-5536	5536	4/17/03 0:00	FA	1,705	41.5	2.74	2.10	.56	100	1.30	.97	89.4
AMIN-5536	5536	4/17/03 0:00	RA	1,705	42.7	2.74	2.19	.53	100	1.30	.97	91.2
AMIN-5536	5536	4/17/03 1:00	FA	1,679	40.9	2.63	2.10	.57	101	1.29	.99	87.4
AMIN-5536	5536	4/17/03 1:00	RA	1,679	42.3	2.74	2.15	.53	101	1.29	.99	88.4
AMIN-5536	5536	4/17/03 9:06	FA	1,516	44.4	2.81	2.25	.52	101	1.29	1.09	95.2
AMIN-5536	5536	4/17/03 9:06	RA	1,516	44.7	2.82	2.30	.51	101	1.29	1.09	93.9
AMIN-5536	5536	4/17/03 10:07	FA	1,503	43.3	2.63	2.18	.52	102	1.23	1.13	88.2
AMIN-5536	5536	4/17/03 10:07	RA	1,503	44.1	2.82	2.27	.51	102	1.23	1.13	94.8
AMIN-5536	5536	4/17/03 11:13	FA	1,515	45.0	2.92	2.34	.53	103	1.28	1.10	97.3
AMIN-5536	5536	4/17/03 11:13	RA	1,515	44.0	2.77	2.25	.54	103	1.28	1.10	94.9
AMIN-5536	5536	4/17/03 12:14	FA	1,439	51.9	2.74	2.25	.48	103	1.21	1.15	88.6
AMIN-5536	5536	4/17/03 12:14	RA	1,439	46.8	2.93	2.35	.53	103	1.21	1.15	98.4
AMIN-5536	5536	4/17/03 14:10	FA	1,620	43.5	2.73	2.27	.55	102	1.15	1.02	91.5
AMIN-5536	5536	4/17/03 14:10	RA	1,620	44.6	2.76	2.24	.54	102	1.15	1.02	90.9
AMIN-6745	6745	4/16/03 13:00	FA	1,358	45.2	2.75	2.33	.53	108	1.37	1.22	99.8
AMIN-6745	6745	4/16/03 13:00	RA	1,358	47.8	2.94	2.45	.56	108	1.37	1.22	101
AMIN-6745	6745	4/16/03 14:00	FA	1,462	46.7	2.78	2.31	.64	107	1.23	1.13	97.7
AMIN-6745	6745	4/16/03 14:00	RA	1,462	45.5	2.90	2.34	.57	107	1.23	1.13	100
AMIN-6745	6745	4/16/03 15:00	FA	1,711	45.4	2.76	2.29	.59	105	1.20	.97	95.9
AMIN-6745	6745	4/16/03 15:00	RA	1,711	44.7	2.79	2.27	.51	105	1.20	.97	98.8
AMIN-6745	6745	4/16/03 16:00	FA	1,817	43.9	2.69	2.12	.62	105	1.37	1.14	94.0
AMIN-6745	6745	4/16/03 16:00	RA	1,817	42.0	2.74	2.15	.54	105	1.37	1.14	95.2
AMIN-6745	6745	4/16/03 17:00	FA	1,819	45.2	2.82	2.19	.60	103	1.19	.91	96.3
AMIN-6745	6745	4/16/03 17:00	RA	1,819	42.4	2.86	2.20	.67	103	1.19	.91	97.0
AMIN-6745	6745	4/16/03 18:00	FA	1,927	45.1	2.86	2.23	.57	103	1.18	.86	98.3

Table E2. Chemical analyses of high-flow temporal samples, Animas River, April 2003
[Filter: FA, 0.45-micrometer, RA, total recoverable; L/s, liters per second; mg/L, milligrams per liter; ug/L, micrograms per liter; Sodium bromide injected tracer]

Site	Distance	Time	Filter	Discharge	Calcium	Magnesium	Sodium	Potassium	Sulfate	Chloride	Bromide	Sulfate, ICP
	meters			L/s	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
AMIN-6745	6745	4/16/03 18:00	RA	1,927	45.1	2.88	2.23	.67	103	1.18	.86	97.3
AMIN-6745	6745	4/16/03 19:00	FA	1,892	42.8	2.71	2.15	.61	102	1.22	.88	94.4
AMIN-6745	6745	4/16/03 19:00	RA	1,892	43.1	2.77	2.14	.57	102	1.22	.88	97.4
AMIN-6745	6745	4/16/03 20:00	FA	1,952	43.4	2.75	2.14	.61	102	1.18	.85	95.5
AMIN-6745	6745	4/16/03 20:00	RA	1,952	43.6	2.72	2.15	.59	102	1.18	.85	93.3
AMIN-6745	6745	4/16/03 21:00	FA	1,872	44.7	2.84	2.22	.66	102	1.21	.89	98.0
AMIN-6745	6745	4/16/03 21:00	RA	1,872	44.3	2.73	2.19	.63	102	1.21	.89	95.5
AMIN-6745	6745	4/16/03 22:00	FA	1,879	43.3	2.82	2.14	.63	101	1.16	.88	93.7
AMIN-6745	6745	4/16/03 22:00	RA	1,879	42.6	2.70	2.15	.60	101	1.16	.88	96.3
AMIN-6745	6745	4/16/03 23:00	FA	1,819	42.5	2.68	2.12	.63	102	1.20	.91	93.4
AMIN-6745	6745	4/16/03 23:00	RA	1,819	42.4	2.65	2.18	.56	102	1.20	.91	91.9
AMIN-6745	6745	4/17/03 0:00	FA	1,774	43.8	2.71	2.16	.61	103	1.17	.94	92.9
AMIN-6745	6745	4/17/03 0:00	RA	1,774	43.7	2.77	2.15	.62	103	1.17	.94	96.0
AMIN-6745	6745	4/17/03 1:00	FA	1,786	42.7	2.67	2.10	.60	104	1.22	.93	91.2
AMIN-6745	6745	4/17/03 1:00	RA	1,786	43.9	2.87	2.23	.65	104	1.22	.93	96.4
AMIN-6745	6745	4/17/03 2:00	FA	1,776	43.2	2.71	2.15	.56	103	1.20	.93	92.8
AMIN-6745	6745	4/17/03 2:00	RA	1,776	41.4	2.68	2.14	.54	103	1.20	.93	91.8
AMIN-6745	6745	4/17/03 3:00	FA	1,757	44.7	2.72	2.10	.58	104	1.20	.94	92.1
AMIN-6745	6745	4/17/03 3:00	RA	1,757	43.7	2.73	2.13	.52	104	1.20	.94	96.4
AMIN-6745	6745	4/17/03 4:00	FA	1,717	44.2	2.85	2.20	.57	103	1.20	.97	95.8
AMIN-6745	6745	4/17/03 4:00	RA	1,717	43.6	2.74	2.15	.58	103	1.20	.97	97.4
AMIN-6745	6745	4/17/03 5:00	FA	1,739	45.1	2.80	2.24	.58	104	1.24	.95	95.0
AMIN-6745	6745	4/17/03 5:00	RA	1,739	43.8	2.73	2.21	.56	104	1.24	.95	96.9
AMIN-6745	6745	4/17/03 6:00	FA	1,721	43.4	2.67	2.15	.54	103	1.17	.96	92.5
AMIN-6745	6745	4/17/03 6:00	RA	1,721	43.7	2.75	2.20	.58	103	1.17	.96	97.4
AMIN-6745	6745	4/17/03 7:00	FA	1,659	45.6	2.84	2.26	.54	104	1.35	1.18	99.0
AMIN-6745	6745	4/17/03 7:00	RA	1,659	43.9	2.75	2.16	.53	104	1.35	1.18	96.3
AMIN-6745	6745	4/17/03 9:17	FA	1,549	47.0	2.96	2.31	.60	109	1.19	1.07	100
AMIN-6745	6745	4/17/03 9:17	RA	1,549	45.7	2.76	2.22	.53	109	1.19	1.07	94.3
AMIN-6745	6745	4/17/03 10:16	FA	1,533	47.1	2.92	2.34	.55	110	1.38	1.23	101
AMIN-6745	6745	4/17/03 10:16	RA	1,533	47.2	2.89	2.38	.59	110	1.38	1.23	99.4
AMIN-6745	6745	4/17/03 11:23	FA	1,517	46.9	3.00	2.38	.56	109	1.32	1.09	102
AMIN-6745	6745	4/17/03 11:23	RA	1,517	46.7	2.99	2.30	.54	109	1.32	1.09	102

Table E2. Chemical analyses of high-flow temporal samples, Animas River, April 2003
[Filter: FA, 0.45-micrometer, RA, total recoverable; L/s, liters per second; mg/L, milligrams per liter; ug/L, micrograms per liter; Sodium bromide injected tracer]

Site	Distance	Time	Filter	Discharge	Calcium	Magnesium	Sodium	Potassium	Sulfate	Chloride	Bromide	Sulfate, ICP
	meters			L/s	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
AMIN-6745	6745	4/17/03 12:20	FA	1,491	46.5	2.88	2.34	.54	110	1.34	1.11	101
AMIN-6745	6745	4/17/03 12:20	RA	1,491	48.0	2.98	2.38	.57	110	1.34	1.11	105
AMIN-6745	6745	4/17/03 14:16	FA	1,751	46.3	2.80	2.31	.58	110	1.29	.95	99.9
AMIN-6745	6745	4/17/03 14:16	RA	1,751	46.1	2.81	2.22	.53	110	1.29	.95	100
AMIN-7306	7306	4/16/03 13:00	FA	1,430	46.7	2.89	2.42	.60	107	1.07	1.16	103
AMIN-7306	7306	4/16/03 13:00	RA	1,430	44.9	2.91	2.34	.62	107	1.07	1.16	99.7
AMIN-7306	7306	4/16/03 14:00	FA	1,444	47.3	2.89	2.42	.54	109	1.31	1.17	99.7
AMIN-7306	7306	4/16/03 14:00	RA	1,444	46.7	2.91	2.41	.57	109	1.31	1.17	99.2
AMIN-7306	7306	4/16/03 15:00	FA	1,708	47.6	2.89	2.33	.60	108	1.28	.80	100
AMIN-7306	7306	4/16/03 15:00	RA	1,708	46.0	2.84	2.26	.58	108	1.28	.80	101
AMIN-7306	7306	4/16/03 16:00	FA	1,827	44.3	2.75	2.23	.55	107	1.17	.95	96.4
AMIN-7306	7306	4/16/03 16:00	RA	1,827	46.7	2.86	2.28	.63	107	1.17	.95	100
AMIN-7306	7306	4/16/03 17:00	FA	1,860	43.6	2.77	2.22	.57	107	1.36	1.15	94.8
AMIN-7306	7306	4/16/03 17:00	RA	1,860	42.8	2.76	2.17	.62	107	1.36	1.15	96.7
AMIN-7306	7306	4/16/03 18:00	FA	1,905	43.7	2.80	2.17	.60	106	1.31	1.06	97.5
AMIN-7306	7306	4/16/03 18:00	RA	1,905	41.4	2.73	2.10	.57	106	1.31	1.06	94.3
AMIN-7306	7306	4/16/03 19:00	FA	2,013	42.4	2.72	2.14	.63	103	1.23	.86	93.6
AMIN-7306	7306	4/16/03 19:00	RA	2,013	42.9	2.73	2.14	.58	103	1.23	.86	95.8
AMIN-7306	7306	4/16/03 20:00	FA	2,038	42.7	2.72	2.13	.62	105	1.18	.86	94.0
AMIN-7306	7306	4/16/03 20:00	RA	2,038	43.1	2.78	2.16	.58	105	1.18	.86	97.8
AMIN-7306	7306	4/16/03 21:00	FA	1,898	43.2	2.74	2.19	.62	104	1.16	.89	96.9
AMIN-7306	7306	4/16/03 21:00	RA	1,898	44.0	2.76	2.14	.63	104	1.16	.89	96.1
AMIN-7306	7306	4/16/03 22:00	FA	1,890	43.7	2.78	2.21	.62	104	1.19	.89	95.7
AMIN-7306	7306	4/16/03 22:00	RA	1,890	43.3	2.77	2.16	.59	104	1.19	.89	94.4
AMIN-7306	7306	4/16/03 23:00	FA	1,821	45.4	2.90	2.24	.60	106	1.28	.92	98.7
AMIN-7306	7306	4/16/03 23:00	RA	1,821	43.9	2.73	2.15	.59	106	1.28	.92	95.0
AMIN-7306	7306	4/17/03 0:00	FA	1,800	44.8	2.87	2.19	.63	106	1.40	1.15	96.6
AMIN-7306	7306	4/17/03 0:00	RA	1,800	44.0	2.78	2.18	.57	106	1.40	1.15	97.6
AMIN-7306	7306	4/17/03 9:23	FA	1,569	45.7	2.87	2.23	.57	110	1.27	1.06	100
AMIN-7306	7306	4/17/03 9:23	RA	1,569	46.6	2.86	2.31	.55	110	1.27	1.06	100
AMIN-7306	7306	4/17/03 10:27	RA	1,603	46.3	3.04	2.37	.57	110	1.41	1.25	104
AMIN-7306	7306	4/17/03 11:29	FA	1,510	46.7	3.05	2.35	.57	111	1.17	1.10	107
AMIN-7306	7306	4/17/03 11:29	RA	1,510	47.1	2.95	2.35	.56	111	1.17	1.10	103

Table E2. Chemical analyses of high-flow temporal samples, Animas River, April 2003
[Filter: FA, 0.45-micrometer, RA, total recoverable; L/s, liters per second; mg/L, milligrams per liter; ug/L, micrograms per liter; Sodium bromide injected tracer]

Site	Distance	Time	Filter	Discharge	Calcium	Magnesium	Sodium	Potassium	Sulfate	Chloride	Bromide	Sulfate, ICP
	meters			L/s	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
AMIN-7306	7306	4/17/03 12:26	FA	1,539	47.2	3.08	2.36	.58	111	1.36	1.08	105
AMIN-7306	7306	4/17/03 12:26	RA	1,539	46.9	3.00	2.33	.55	111	1.36	1.08	103
AMIN-7306	7306	4/17/03 14:22	FA	1,414	46.0	2.78	2.21	.57	111	1.33	1.17	96.4
AMIN-7306	7306	4/17/03 14:22	RA	1,414	47.2	2.86	2.31	.54	111	1.33	1.17	99.5
AMIN-7858	7858	4/16/03 13:00	FA	1,209	47.7	2.92	2.36	.64	117	1.54	1.37	104
AMIN-7858	7858	4/16/03 13:00	RA	1,209	48.8	3.00	2.40	.69	117	1.54	1.37	110
AMIN-7858	7858	4/16/03 14:00	FA	1,476	49.8	2.98	2.45	.67	118	1.49	1.12	109
AMIN-7858	7858	4/16/03 14:00	RA	1,476	48.3	3.08	2.45	.68	118	1.49	1.12	107
AMIN-7858	7858	4/16/03 17:00	FA	2,021	47.5	3.01	2.28	.70	116	1.60	1.08	107
AMIN-7858	7858	4/16/03 17:00	RA	2,021	47.2	3.04	2.25	.72	116	1.60	1.08	110
AMIN-7858	7858	4/16/03 18:00	FA	1,999	45.7	2.85	2.17	.66	115	1.40	.86	100
AMIN-7858	7858	4/16/03 18:00	RA	1,999	44.0	2.98	2.15	.72	115	1.40	.86	103
AMIN-7858	7858	4/16/03 19:00	FA	2,108	44.3	2.81	2.15	.65	111	1.35	.82	97.9
AMIN-7858	7858	4/16/03 19:00	RA	2,108	46.9	3.01	2.22	.74	111	1.35	.82	107
AMIN-7858	7858	4/16/03 20:00	FA	2,063	46.4	2.91	2.19	.67	111	1.49	1.02	101
AMIN-7858	7858	4/16/03 20:00	RA	2,063	45.1	2.88	2.21	.68	111	1.49	1.02	97.6
AMIN-7858	7858	4/16/03 21:00	FA	2,066	46.2	2.88	2.21	.66	111	1.31	.85	103
AMIN-7858	7858	4/16/03 21:00	RA	2,066	44.5	2.92	2.15	.72	111	1.31	.85	102
AMIN-7858	7858	4/16/03 22:00	FA	1,963	45.2	2.82	2.21	.66	111	1.35	.86	97.7
AMIN-7858	7858	4/16/03 22:00	RA	1,963	45.2	2.96	2.15	.73	111	1.35	.86	101
AMIN-7858	7858	4/16/03 23:00	FA	1,922	45.6	2.85	2.22	.63	109	1.47	1.07	99.7
AMIN-7858	7858	4/16/03 23:00	RA	1,922	47.1	2.95	2.23	.70	109	1.47	1.07	101
AMIN-7858	7858	4/17/03 0:00	FA	1,879	44.2	2.82	2.08	.63	111	1.35	.90	95.1
AMIN-7858	7858	4/17/03 0:00	RA	1,879	44.0	2.94	2.19	.69	111	1.35	.90	103
AMIN-7858	7858	4/17/03 1:00	FA	1,866	46.2	2.87	2.22	.64	111	1.48	1.11	99.2
AMIN-7858	7858	4/17/03 1:00	RA	1,866	44.4	2.88	2.17	.70	111	1.48	1.11	100
AMIN-7858	7858	4/17/03 2:00	FA	1,852	45.2	2.89	2.20	.62	111	1.28	.90	101
AMIN-7858	7858	4/17/03 2:00	RA	1,852	45.5	3.05	2.26	.66	111	1.28	.90	105
AMIN-7858	7858	4/17/03 3:00	FA	1,850	47.0	3.00	2.26	.62	111	1.44	1.14	100
AMIN-7858	7858	4/17/03 3:00	RA	1,850	45.8	2.96	2.18	.73	111	1.44	1.14	103
AMIN-7858	7858	4/17/03 4:00	FA	1,801	45.3	2.89	2.30	.60	111	1.43	1.13	102
AMIN-7858	7858	4/17/03 4:00	RA	1,801	43.7	2.89	2.12	.67	111	1.43	1.13	99.5
AMIN-7858	7858	4/17/03 5:00	FA	1,752	46.1	2.93	2.20	.69	111	1.40	.94	102

Table E2. Chemical analyses of high-flow temporal samples, Animas River, April 2003
[Filter: FA, 0.45-micrometer, RA, total recoverable; L/s, liters per second; mg/L, milligrams per liter; ug/L, micrograms per liter; Sodium bromide injected tracer]

Site	Distance	Time	Filter	Discharge	Calcium	Magnesium	Sodium	Potassium	Sulfate	Chloride	Bromide	Sulfate, ICP
	meters			L/s	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
AMIN-7858	7858	4/17/03 5:00	RA	1,752	44.1	2.89	2.18	.64	111	1.40	.94	101
AMIN-7858	7858	4/17/03 6:00	FA	1,769	45.7	2.94	2.19	.67	111	1.25	.94	103
AMIN-7858	7858	4/17/03 6:00	RA	1,769	46.4	2.94	2.29	.64	111	1.25	.94	102
AMIN-7858	7858	4/17/03 9:23	FA	1,388	48.5	3.06	2.32	.60	117	1.52	1.20	109
AMIN-7858	7858	4/17/03 9:23	RA	1,388	48.2	3.16	2.37	.59	117	1.52	1.20	108
AMIN-7858	7858	4/17/03 10:38	FA	1,331	48.3	3.02	2.31	.60	118	1.53	1.25	107
AMIN-7858	7858	4/17/03 10:38	RA	1,331	49.6	3.18	2.45	.66	118	1.53	1.25	109
AMIN-7858	7858	4/17/03 11:35	FA	1,559	48.3	3.02	2.35	.59	117	1.37	1.06	109
AMIN-7858	7858	4/17/03 11:35	RA	1,559	47.8	3.13	2.38	.60	117	1.37	1.06	109
AMIN-7858	7858	4/17/03 12:45	FA	1,612	48.6	2.97	2.37	.58	119	1.42	1.08	110
AMIN-7858	7858	4/17/03 12:45	RA	1,612	48.6	3.18	2.40	.59	119	1.42	1.08	110
AMIN-7858	7858	4/17/03 14:32	FA	1,444	47.6	2.98	2.32	.63	119	1.47	1.15	107
AMIN-7858	7858	4/17/03 14:32	RA	1,444	48.6	2.96	2.36	.61	119	1.47	1.15	111

Table E2. Chemical analyses of high-flow temporal samples, Animas River, April 2003
[Filter: FA, 0.45-micrometer, RA, total recoverable; L/s, liters per second; mg/L, milligrams per liter; ug/L, micrograms per liter; Sodium bromide injected tracer]

Site	Distance	Time	Filter	Silica	Aluminum	Arsenic	Barium	Cadmium	Chromium	Cobalt	Copper	Iron	Lead	Lithium
	meters			mg/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
AMIN-4166	4166	4/16/03 13:00	FA	6.26	70.3	.19	24.9	.89	.03	.39	2.60	19.9	.57	5.80
AMIN-4166	4166	4/16/03 13:00	RA	7.07	271	.52	29.7	1.16	.15	.56	9.22	466	11.6	6.05
AMIN-4166	4166	4/16/03 14:00	FA	6.62	51.1	.20	24.8	.85	.02	.62	3.19	19.7	.57	5.85
AMIN-4166	4166	4/16/03 14:00	RA	6.29	57.8	.21	24.2	.85	.02	.47	4.18	62.1	1.40	5.63
AMIN-4166	4166	4/16/03 15:00	FA	6.38	47.4	.15	23.9	.88	.02	.55	2.68	18.3	.59	5.81
AMIN-4166	4166	4/16/03 15:00	RA	6.59	68.1	.20	23.4	.90	.03	.44	4.06	82.1	1.94	5.32
AMIN-4166	4166	4/16/03 16:00	FA	6.36	41.9	.15	23.7	.90	.03	.46	2.86	14.7	.52	5.58
AMIN-4166	4166	4/16/03 16:00	RA	6.32	69.2	.18	23.5	.96	.03	.42	4.33	84.4	2.09	5.42
AMIN-4166	4166	4/17/03 8:37	FA	6.51	36.0	.09	23.4	1.06	.15	.32	3.59	15.6	.50	5.42
AMIN-4166	4166	4/17/03 8:37	RA	6.59	64.2	.12	24.8	1.07	.08	.32	5.52	68.3	1.91	5.49
AMIN-4166	4166	4/17/03 9:48	FA	6.38	30.7	.10	24.4	1.01	.12	.32	3.56	11.9	.36	5.47
AMIN-4166	4166	4/17/03 9:48	RA	6.65	57.5	.13	23.8	1.04	.13	.31	5.13	67.0	1.72	5.33
AMIN-4166	4166	4/17/03 11:01	FA	6.67	32.6	.09	24.7	.99	.11	.33	3.42	11.6	.40	5.41
AMIN-4166	4166	4/17/03 11:01	RA	6.61	57.6	.12	23.8	1.00	.15	.31	5.17	67.4	1.81	5.42
AMIN-4166	4166	4/17/03 11:59	FA	6.57	63.7	.11	25.5	.98	.35	.30	5.48	95.8	.67	5.62
AMIN-4166	4166	4/17/03 11:59	RA	6.72	58.0	.14	24.4	.98	.13	.30	4.91	61.5	1.65	5.83
AMIN-4166	4166	4/17/03 13:55	FA	6.04	56.6	.12	23.5	.89	.10	.25	3.78	12.2	.46	5.66
AMIN-4166	4166	4/17/03 13:55	RA	6.46	85.2	.16	23.7	.93	.02	.28	5.58	98.1	2.40	5.65
AMIN-4916	4916	4/16/03 13:00	FA	6.37	24.9	.34	24.3	1.23	.11	.38	2.82	8.50	.25	6.22
AMIN-4916	4916	4/16/03 13:00	RA	6.41	47.5	.40	24.0	1.25	.03	.38	4.47	64.1	1.73	6.28
AMIN-4916	4916	4/16/03 14:00	FA	6.42	30.6	.40	24.2	1.09	.19	.53	2.67	15.1	.49	6.14
AMIN-4916	4916	4/16/03 14:00	RA	6.70	44.4	.48	24.5	1.15	.03	.35	4.16	64.5	1.71	6.19
AMIN-4916	4916	4/16/03 16:00	FA	6.41	28.1	.39	23.4	1.18	.03	.46	3.22	13.2	.46	6.09
AMIN-4916	4916	4/16/03 16:00	RA	6.33	65.0	.44	22.9	1.17	.02	.35	5.16	80.1	2.01	5.80
AMIN-4916	4916	4/16/03 17:00	FA	6.48	28.3	.30	23.4	1.17	.12	.41	3.70	10.8	.54	6.10
AMIN-4916	4916	4/16/03 17:00	RA	6.43	81.1	.39	23.4	1.21	.03	.38	5.89	104	2.68	6.09
AMIN-4916	4916	4/16/03 18:00	FA	6.30	31.6	.33	24.1	1.15	.03	.51	3.59	12.8	.48	6.13
AMIN-4916	4916	4/16/03 18:00	RA	6.31	74.6	.42	23.5	1.18	.12	.37	5.49	87.0	2.22	5.82
AMIN-4916	4916	4/16/03 19:00	FA	6.51	37.5	.31	23.2	1.22	.17	.53	3.42	16.3	.55	6.37
AMIN-4916	4916	4/16/03 19:00	RA	6.30	82.6	.41	23.4	1.25	.02	.39	5.92	107	2.92	5.55
AMIN-4916	4916	4/16/03 20:00	FA	6.11	29.9	.28	23.1	1.31	.03	.45	3.44	13.4	.51	5.89
AMIN-4916	4916	4/16/03 20:00	RA	6.27	91.0	.39	22.8	1.32	.11	.41	6.41	116	2.80	5.69
AMIN-4916	4916	4/16/03 21:00	FA	6.10	28.4	.29	22.9	1.39	.04	.63	3.73	17.6	.53	5.65

Table E2. Chemical analyses of high-flow temporal samples, Animas River, April 2003
[Filter: FA, 0.45-micrometer, RA, total recoverable; L/s, liters per second; mg/L, milligrams per liter; ug/L, micrograms per liter; Sodium bromide injected tracer]

Site	Distance	Time	Filter	Silica	Aluminum	Arsenic	Barium	Cadmium	Chromium	Cobalt	Copper	Iron	Lead	Lithum
	meters			mg/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
AMIN-4916	4916	4/16/03 21:00	RA	6.35	95.7	.44	23.1	1.47	.03	.44	6.88	119	2.85	5.73
AMIN-4916	4916	4/16/03 22:00	FA	6.46	27.7	.25	23.4	1.45	.02	.58	3.53	18.3	.51	5.80
AMIN-4916	4916	4/16/03 22:00	RA	6.29	82.6	.32	23.6	1.49	.02	.46	6.59	100	2.41	5.75
AMIN-4916	4916	4/16/03 23:00	FA	6.33	27.4	.27	24.0	1.51	.02	.57	3.77	24.0	.57	5.91
AMIN-4916	4916	4/16/03 23:00	RA	6.23	89.0	.35	22.8	1.49	.03	.44	6.73	107	2.35	5.71
AMIN-4916	4916	4/17/03 0:00	FA	6.35	64.3	.24	24.2	1.49	.03	.55	3.83	13.0	.45	5.91
AMIN-4916	4916	4/17/03 0:00	RA	6.32	91.0	.29	23.8	1.48	.03	.47	7.33	114	2.74	5.77
AMIN-4916	4916	4/17/03 1:00	FA	6.27	28.6	.21	23.7	1.55	.02	.54	3.71	13.2	.40	5.97
AMIN-4916	4916	4/17/03 1:00	RA	6.37	96.5	.30	23.6	1.56	.02	.46	7.70	120	2.92	5.58
AMIN-4916	4916	4/17/03 8:50	FA	6.40	50.2	.09	25.1	1.63	.10	.42	10.4	6.64	.71	5.82
AMIN-4916	4916	4/17/03 8:50	RA	6.67	96.9	.13	24.3	1.65	.16	.42	8.70	72.4	2.06	5.68
AMIN-4916	4916	4/17/03 9:57	FA	6.56	49.5	.09	24.4	1.61	.21	.40	6.19	5.98	.29	5.92
AMIN-4916	4916	4/17/03 9:57	RA	6.72	97.3	.12	24.1	1.64	.21	.41	8.29	70.1	2.05	5.89
AMIN-4916	4916	4/17/03 11:08	FA	6.50	51.5	.08	24.5	1.57	.13	.40	5.46	10.1	.32	5.78
AMIN-4916	4916	4/17/03 11:08	RA	6.92	99.6	.12	24.5	1.54	.13	.38	8.18	71.1	2.08	5.71
AMIN-4916	4916	4/17/03 12:06	FA	6.18	58.3	.12	25.0	1.48	.13	.44	5.36	7.12	.34	5.91
AMIN-4916	4916	4/17/03 12:06	RA	6.76	102	.11	23.6	1.50	.12	.40	8.40	73.9	2.37	5.89
AMIN-4916	4916	4/17/03 14:02	FA	6.25	50.9	.10	24.2	1.38	.02	.40	4.55	7.79	.35	6.00
AMIN-4916	4916	4/17/03 14:02	RA	6.77	186	.26	25.3	1.42	.05	.44	9.62	233	4.91	6.12
AMIN-5536	5536	4/16/03 13:00	FA	6.21	54.6	.10	24.0	1.70	.01	1.16	3.91	7.46	.48	6.10
AMIN-5536	5536	4/16/03 13:00	RA	6.56	73.8	.14	24.2	1.79	.03	.63	6.78	76.5	2.28	6.58
AMIN-5536	5536	4/16/03 14:00	FA	6.43	34.5	.10	24.3	1.54	.12	.83	4.02	12.4	.49	6.24
AMIN-5536	5536	4/16/03 14:00	RA	6.41	80.6	.13	23.8	1.56	.13	.54	6.72	80.1	2.38	5.96
AMIN-5536	5536	4/16/03 15:00	FA	6.33	23.0	.11	23.7	1.49	.02	1.01	3.50	13.2	.49	5.81
AMIN-5536	5536	4/16/03 15:00	RA	6.30	67.6	.11	23.3	1.52	.14	.51	5.65	71.0	2.26	6.12
AMIN-5536	5536	4/16/03 16:00	FA	6.28	27.1	.10	23.5	1.51	.02	.92	3.77	14.0	.53	5.94
AMIN-5536	5536	4/16/03 16:00	RA	6.54	76.5	.14	23.2	1.51	.03	.54	6.38	76.0	2.38	5.97
AMIN-5536	5536	4/16/03 17:00	FA	6.27	28.9	.10	23.0	1.50	.02	.84	4.76	11.7	.50	6.00
AMIN-5536	5536	4/16/03 17:00	RA	6.40	83.6	.14	23.1	1.55	.03	.53	6.50	77.6	2.46	5.88
AMIN-5536	5536	4/16/03 18:00	FA	6.20	27.9	.11	23.2	1.50	.05	1.03	3.99	13.9	.59	5.62
AMIN-5536	5536	4/16/03 18:00	RA	6.66	90.9	.13	23.1	1.51	.02	.54	6.36	88.7	2.51	5.77
AMIN-5536	5536	4/16/03 19:00	FA	6.05	38.1	.10	22.5	1.51	.01	.80	3.97	13.6	.57	5.67
AMIN-5536	5536	4/16/03 19:00	RA	6.14	93.3	.15	22.4	1.50	.13	.53	6.71	95.0	2.73	5.59

Table E2. Chemical analyses of high-flow temporal samples, Animas River, April 2003
[Filter: FA, 0.45-micrometer, RA, total recoverable; L/s, liters per second; mg/L, milligrams per liter; ug/L, micrograms per liter; Sodium bromide injected tracer]

Site	Distance	Time	Filter	Silica	Aluminum	Arsenic	Barium	Cadmium	Chromium	Cobalt	Copper	Iron	Lead	Lithium
	meters			mg/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
AMIN-5536	5536	4/16/03 20:00	FA	6.10	22.4	.10	22.8	1.62	.02	.76	4.07	14.5	.58	5.81
AMIN-5536	5536	4/16/03 20:00	RA	6.28	88.5	.14	22.8	1.60	.13	.57	6.94	93.6	2.69	5.69
AMIN-5536	5536	4/16/03 21:00	FA	6.35	27.5	.10	23.3	1.76	.15	.93	4.48	14.5	.57	6.04
AMIN-5536	5536	4/16/03 21:00	RA	6.44	90.0	.14	22.6	1.66	.04	.60	7.57	96.3	2.66	5.89
AMIN-5536	5536	4/16/03 22:00	FA	6.20	23.8	.09	22.9	1.70	.02	1.04	3.95	16.0	.51	5.81
AMIN-5536	5536	4/16/03 22:00	RA	6.46	90.2	.14	22.9	1.68	.03	.61	7.18	107	2.75	5.71
AMIN-5536	5536	4/16/03 23:00	FA	6.49	29.8	.09	20.4	1.51	.01	.70	3.40	14.6	.42	5.10
AMIN-5536	5536	4/16/03 23:00	RA	6.52	91.5	.14	22.6	1.65	.03	.61	7.18	109	2.74	5.77
AMIN-5536	5536	4/17/03 0:00	FA	6.33	32.3	.10	22.7	1.66	.02	1.00	3.78	15.5	.47	5.49
AMIN-5536	5536	4/17/03 0:00	RA	6.59	89.0	.13	23.7	1.73	.03	.64	7.28	105	2.63	5.83
AMIN-5536	5536	4/17/03 1:00	FA	6.27	24.8	.10	23.2	1.76	.08	.91	3.90	11.3	.38	5.89
AMIN-5536	5536	4/17/03 1:00	RA	6.45	87.8	.12	23.2	1.77	.03	.63	7.09	101	2.67	5.77
AMIN-5536	5536	4/17/03 9:06	FA	6.59	53.3	.07	23.5	1.73	.12	.58	6.20	8.22	.38	5.91
AMIN-5536	5536	4/17/03 9:06	RA	6.70	118	.12	23.5	1.73	.02	.60	10.1	93.4	2.79	5.82
AMIN-5536	5536	4/17/03 10:07	FA	6.20	53.5	.09	23.1	1.68	.18	.60	6.29	15.9	.58	5.78
AMIN-5536	5536	4/17/03 10:07	RA	6.72	117	.13	22.8	1.66	.11	.54	10.2	90.7	2.74	5.91
AMIN-5536	5536	4/17/03 11:13	FA	6.57	58.5	.09	24.0	1.71	.11	.61	6.20	10.1	.45	5.93
AMIN-5536	5536	4/17/03 11:13	RA	6.58	123	.11	24.0	1.69	.22	.59	10.5	98.1	3.06	5.81
AMIN-5536	5536	4/17/03 12:14	FA	6.25	75.6	.10	23.6	1.58	.08	.61	6.16	15.2	.50	5.97
AMIN-5536	5536	4/17/03 12:14	RA	6.81	128	.13	24.3	1.65	.12	.59	10.1	105	3.27	5.90
AMIN-5536	5536	4/17/03 14:10	FA	6.38	60.0	.10	24.1	1.45	.02	.53	5.04	25.8	1.01	6.30
AMIN-5536	5536	4/17/03 14:10	RA	7.05	253	.27	24.9	1.53	.07	.67	11.2	293	6.34	6.17
AMIN-6745	6745	4/16/03 13:00	FA	6.35	27.6	.26	22.8	1.88	.11	.98	2.80	7.31	.15	5.99
AMIN-6745	6745	4/16/03 13:00	RA	6.95	134	.44	24.0	2.06	.21	.88	8.50	193	3.84	6.66
AMIN-6745	6745	4/16/03 14:00	FA	6.39	26.3	.29	23.3	1.81	.12	.88	3.01	7.01	.30	6.29
AMIN-6745	6745	4/16/03 14:00	RA	6.47	111	.42	23.8	1.91	.04	.80	7.87	172	3.57	6.37
AMIN-6745	6745	4/16/03 15:00	FA	6.37	21.5	.28	23.5	1.60	.12	.85	2.88	12.2	.32	6.45
AMIN-6745	6745	4/16/03 15:00	RA	6.72	114	.47	23.2	1.71	.11	.76	7.85	194	4.29	6.46
AMIN-6745	6745	4/16/03 16:00	FA	6.22	22.6	.31	22.5	1.63	.15	.92	3.11	15.8	.40	6.24
AMIN-6745	6745	4/16/03 16:00	RA	6.48	130	.47	22.8	1.69	.14	.76	8.52	202	4.89	6.43
AMIN-6745	6745	4/16/03 17:00	FA	6.55	20.7	.26	21.5	1.62	.16	1.04	3.00	16.2	.28	6.35
AMIN-6745	6745	4/16/03 17:00	RA	6.62	141	.43	23.5	1.77	.03	.78	9.14	225	5.61	6.25
AMIN-6745	6745	4/16/03 18:00	FA	6.66	24.1	.24	22.7	1.65	.02	.91	3.14	13.5	.39	6.30

Table E2. Chemical analyses of high-flow temporal samples, Animas River, April 2003
[Filter: FA, 0.45-micrometer, RA, total recoverable; L/s, liters per second; mg/L, milligrams per liter; ug/L, micrograms per liter; Sodium bromide injected tracer]

Site	Distance	Time	Filter	Silica	Aluminum	Arsenic	Barium	Cadmium	Chromium	Cobalt	Copper	Iron	Lead	Lithum
	meters			mg/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
AMIN-6745	6745	4/16/03 18:00	RA	6.91	178	.44	23.8	1.76	.04	.80	10.7	277	6.56	6.36
AMIN-6745	6745	4/16/03 19:00	FA	6.30	30.3	.29	22.9	1.69	.03	.99	3.75	24.7	.96	6.22
AMIN-6745	6745	4/16/03 19:00	RA	6.65	160	.43	23.0	1.78	.04	.79	9.49	228	5.36	6.20
AMIN-6745	6745	4/16/03 20:00	FA	6.43	26.7	.29	23.0	1.77	.01	.94	3.59	13.3	.62	6.44
AMIN-6745	6745	4/16/03 20:00	RA	6.54	165	.45	22.7	1.84	.06	.80	9.77	238	5.68	6.24
AMIN-6745	6745	4/16/03 21:00	FA	6.62	24.8	.27	22.9	1.88	.02	.97	3.55	13.8	.37	6.31
AMIN-6745	6745	4/16/03 21:00	RA	6.66	165	.43	23.2	1.96	.04	.85	10.4	236	5.38	6.17
AMIN-6745	6745	4/16/03 22:00	FA	6.43	22.3	.24	22.6	1.96	.03	.88	3.43	8.83	.25	6.16
AMIN-6745	6745	4/16/03 22:00	RA	6.53	148	.37	22.3	1.93	.04	.82	9.60	212	4.48	6.05
AMIN-6745	6745	4/16/03 23:00	FA	6.28	24.1	.20	21.8	1.84	.01	1.06	3.22	12.0	.28	5.97
AMIN-6745	6745	4/16/03 23:00	RA	6.43	142	.40	23.4	2.00	.03	.87	9.90	213	4.71	6.18
AMIN-6745	6745	4/17/03 0:00	FA	6.30	23.0	.23	22.6	1.93	.01	1.11	3.29	10.5	.25	5.99
AMIN-6745	6745	4/17/03 0:00	RA	6.71	165	.41	23.7	2.07	.03	.89	10.6	247	5.38	6.18
AMIN-6745	6745	4/17/03 1:00	FA	6.23	22.8	.21	22.9	1.97	.01	.93	3.32	7.03	.19	5.83
AMIN-6745	6745	4/17/03 1:00	RA	6.79	154	.33	24.2	2.14	.03	.88	10.3	229	4.75	6.18
AMIN-6745	6745	4/17/03 2:00	FA	6.24	22.0	.18	22.2	1.91	.07	.87	3.21	5.85	.14	6.05
AMIN-6745	6745	4/17/03 2:00	RA	6.29	147	.31	23.5	2.06	.18	.87	10.1	217	4.54	6.02
AMIN-6745	6745	4/17/03 3:00	FA	6.34	20.9	.20	22.2	1.91	.08	1.08	3.10	8.36	.18	5.66
AMIN-6745	6745	4/17/03 3:00	RA	6.50	156	.33	22.5	2.03	.18	.86	9.84	224	4.44	5.94
AMIN-6745	6745	4/17/03 4:00	FA	6.53	23.5	.18	23.2	2.00	.13	1.09	3.28	8.65	.22	6.11
AMIN-6745	6745	4/17/03 4:00	RA	6.60	139	.30	23.7	2.06	.13	.86	9.52	199	3.99	6.07
AMIN-6745	6745	4/17/03 5:00	FA	6.45	19.5	.11	22.1	1.82	.16	1.02	2.99	6.72	.19	5.92
AMIN-6745	6745	4/17/03 5:00	RA	6.65	141	.26	23.2	1.94	.19	.87	9.38	205	4.17	6.04
AMIN-6745	6745	4/17/03 6:00	FA	6.33	16.4	.14	21.6	1.84	.22	.94	3.21	91.2	.14	6.03
AMIN-6745	6745	4/17/03 6:00	RA	6.65	145	.30	22.6	1.89	.16	.84	9.11	215	4.00	5.91
AMIN-6745	6745	4/17/03 7:00	FA	6.52	20.9	.16	22.6	1.98	.12	1.37	3.08	8.36	.14	6.54
AMIN-6745	6745	4/17/03 7:00	RA	6.58	154	.33	23.0	2.04	.25	.94	9.84	221	4.56	7.06
AMIN-6745	6745	4/17/03 9:17	FA	6.65	47.3	.08	23.4	2.06	.02	.84	4.66	7.18	.13	5.86
AMIN-6745	6745	4/17/03 9:17	RA	6.44	153	.12	24.1	2.15	.03	.84	11.6	186	3.78	6.07
AMIN-6745	6745	4/17/03 10:16	FA	6.63	52.1	.07	23.5	2.12	.12	.89	6.03	13.0	.12	6.01
AMIN-6745	6745	4/17/03 10:16	RA	6.66	172	.14	23.9	2.16	.13	.88	11.7	184	3.59	6.24
AMIN-6745	6745	4/17/03 11:23	FA	6.77	51.7	.07	24.3	2.07	.16	.86	5.46	13.0	.18	6.17
AMIN-6745	6745	4/17/03 11:23	RA	6.62	163	.12	25.7	2.18	.13	.86	12.4	191	3.89	6.49

Table E2. Chemical analyses of high-flow temporal samples, Animas River, April 2003
[Filter: FA, 0.45-micrometer, RA, total recoverable; L/s, liters per second; mg/L, milligrams per liter; ug/L, micrograms per liter; Sodium bromide injected tracer]

Site	Distance	Time	Filter	Silica	Aluminum	Arsenic	Barium	Cadmium	Chromium	Cobalt	Copper	Iron	Lead	Lithium
	meters			mg/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
AMIN-6745	6745	4/17/03 12:20	FA	6.50	53.7	.10	23.5	1.98	.12	.86	4.72	12.9	.15	6.57
AMIN-6745	6745	4/17/03 12:20	RA	6.95	165	.11	24.1	2.04	.10	.79	11.7	174	3.87	6.29
AMIN-6745	6745	4/17/03 14:16	FA	6.39	61.3	.09	23.7	1.82	.06	.83	5.21	21.2	.50	6.32
AMIN-6745	6745	4/17/03 14:16	RA	6.66	166	.15	23.5	1.89	.02	.78	11.3	186	4.46	6.52
AMIN-7306	7306	4/16/03 13:00	FA	6.61	37.8	.10	24.5	2.25	.02	1.00	3.62	22.2	.53	6.36
AMIN-7306	7306	4/16/03 13:00	RA	6.63	122	.14	24.1	2.34	.04	.82	8.57	175	3.85	6.10
AMIN-7306	7306	4/16/03 14:00	FA	6.62	36.7	.09	23.7	2.07	.01	.88	3.56	18.6	.42	6.43
AMIN-7306	7306	4/16/03 14:00	RA	6.69	124	.15	23.9	2.13	.02	.76	8.49	176	3.88	6.35
AMIN-7306	7306	4/16/03 15:00	FA	6.40	40.5	.08	24.0	1.94	.02	.80	3.80	18.1	.44	6.78
AMIN-7306	7306	4/16/03 15:00	RA	6.53	126	.16	24.6	2.05	.03	.76	8.52	164	3.80	6.35
AMIN-7306	7306	4/16/03 16:00	FA	6.23	25.2	.10	23.2	1.86	.02	.82	3.52	17.0	.50	6.39
AMIN-7306	7306	4/16/03 16:00	RA	6.77	127	.19	24.2	1.88	.03	.77	7.91	171	4.63	6.21
AMIN-7306	7306	4/16/03 17:00	FA	6.54	41.6	.10	22.5	1.95	.10	.97	4.48	37.2	.88	6.43
AMIN-7306	7306	4/16/03 17:00	RA	6.42	151	.22	23.7	2.06	.15	.77	9.71	198	5.17	6.22
AMIN-7306	7306	4/16/03 18:00	FA	6.46	32.3	.13	22.2	1.94	.02	.81	3.85	13.7	.41	6.76
AMIN-7306	7306	4/16/03 18:00	RA	6.39	167	.20	22.9	2.02	.16	.79	10.3	230	6.03	6.14
AMIN-7306	7306	4/16/03 19:00	FA	6.37	37.3	.10	23.2	1.90	.02	.77	4.02	17.1	.52	6.32
AMIN-7306	7306	4/16/03 19:00	RA	6.52	143	.15	23.5	2.00	.04	.74	9.17	161	4.06	6.30
AMIN-7306	7306	4/16/03 20:00	FA	6.30	36.9	.09	22.7	2.01	.02	.80	4.18	15.9	.51	6.12
AMIN-7306	7306	4/16/03 20:00	RA	6.71	146	.15	23.2	2.06	.10	.77	9.61	177	4.28	6.21
AMIN-7306	7306	4/16/03 21:00	FA	6.42	38.1	.10	22.2	1.97	.15	.83	3.84	16.7	.46	6.14
AMIN-7306	7306	4/16/03 21:00	RA	6.64	158	.16	23.0	2.10	.11	.81	9.82	191	4.77	5.98
AMIN-7306	7306	4/16/03 22:00	FA	6.57	33.6	.10	23.1	2.10	.02	.83	4.09	17.7	.57	6.26
AMIN-7306	7306	4/16/03 22:00	RA	6.41	147	.16	23.4	2.23	.04	.83	10.3	189	4.58	6.13
AMIN-7306	7306	4/16/03 23:00	FA	6.61	33.2	.08	22.6	2.07	.01	1.33	3.90	16.9	.44	6.07
AMIN-7306	7306	4/16/03 23:00	RA	6.41	152	.18	23.3	2.22	.15	.84	10.2	191	4.52	5.88
AMIN-7306	7306	4/17/03 0:00	FA	6.41	34.4	.08	22.9	2.05	.02	.88	3.83	12.8	.34	6.03
AMIN-7306	7306	4/17/03 0:00	RA	6.51	147	.14	23.2	2.15	.04	.84	10.1	191	4.51	6.00
AMIN-7306	7306	4/17/03 9:23	FA	6.50	46.7	.09	23.4	2.16	.03	.82	4.80	6.46	.18	5.96
AMIN-7306	7306	4/17/03 9:23	RA	6.72	168	.13	23.2	2.19	.02	.80	11.5	189	3.67	5.98
AMIN-7306	7306	4/17/03 10:27	RA	6.75	158	.09	22.9	2.12	.11	.81	11.3	179	3.72	5.94
AMIN-7306	7306	4/17/03 11:29	FA	6.77	55.0	.09	24.1	2.16	.13	.82	5.18	12.6	.20	6.19
AMIN-7306	7306	4/17/03 11:29	RA	6.75	157	.18	23.5	2.17	.15	.85	11.7	172	3.66	6.42

Table E2. Chemical analyses of high-flow temporal samples, Animas River, April 2003
[Filter: FA, 0.45-micrometer, RA, total recoverable; L/s, liters per second; mg/L, milligrams per liter; ug/L, micrograms per liter; Sodium bromide injected tracer]

Site	Distance	Time	Filter	Silica	Aluminum	Arsenic	Barium	Cadmium	Chromium	Cobalt	Copper	Iron	Lead	Lithum
	meters			mg/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
AMIN-7306	7306	4/17/03 12:26	FA	6.77	58.5	.07	24.0	2.18	.10	.84	4.98	4.89	.15	6.41
AMIN-7306	7306	4/17/03 12:26	RA	6.90	163	.09	24.1	2.24	.12	.83	11.6	175	3.87	6.40
AMIN-7306	7306	4/17/03 14:22	FA	6.39	78.7	.12	24.0	1.95	.02	.76	5.08	7.80	.25	6.17
AMIN-7306	7306	4/17/03 14:22	RA	6.74	162	.13	24.0	1.99	.11	.75	11.0	178	4.16	6.05
AMIN-7858	7858	4/16/03 13:00	FA	6.37	24.3	.19	23.2	2.32	.11	1.11	3.00	4.34	.13	6.97
AMIN-7858	7858	4/16/03 13:00	RA	6.93	139	.26	23.8	2.43	.13	.99	8.79	198	3.99	6.95
AMIN-7858	7858	4/16/03 14:00	FA	6.85	27.7	.23	23.4	2.19	.11	1.08	3.19	10.7	.24	7.12
AMIN-7858	7858	4/16/03 14:00	RA	7.41	267	.54	25.3	2.42	.20	1.05	12.8	451	9.45	6.95
AMIN-7858	7858	4/16/03 17:00	FA	6.60	23.5	.17	21.7	2.00	.08	1.23	3.06	7.96	.21	7.17
AMIN-7858	7858	4/16/03 17:00	RA	6.70	155	.25	23.0	2.18	.09	1.05	8.69	232	4.67	7.00
AMIN-7858	7858	4/16/03 18:00	FA	6.23	48.3	.16	21.1	2.01	.08	1.30	3.16	4.47	.11	6.66
AMIN-7858	7858	4/16/03 18:00	RA	6.53	155	.26	22.3	2.17	.14	1.01	8.70	228	4.72	6.68
AMIN-7858	7858	4/16/03 19:00	FA	6.20	22.9	.19	21.8	2.00	.07	1.07	3.31	4.43	.13	6.62
AMIN-7858	7858	4/16/03 19:00	RA	6.83	170	.25	22.1	2.14	.09	.97	8.90	250	4.63	6.52
AMIN-7858	7858	4/16/03 20:00	FA	6.39	24.6	.19	21.5	2.81	.13	1.53	3.25	6.64	.17	7.19
AMIN-7858	7858	4/16/03 20:00	RA	6.73	153	.26	22.7	2.19	.13	.98	9.12	241	4.45	6.78
AMIN-7858	7858	4/16/03 21:00	FA	6.35	24.2	.15	22.0	2.18	.15	1.48	3.11	7.40	.18	7.04
AMIN-7858	7858	4/16/03 21:00	RA	6.50	154	.24	21.9	2.24	.13	.94	8.76	213	4.28	6.34
AMIN-7858	7858	4/16/03 22:00	FA	6.38	24.3	.16	21.5	2.13	.08	1.29	3.32	5.78	.15	6.66
AMIN-7858	7858	4/16/03 22:00	RA	6.51	144	.26	22.6	2.28	.10	.92	9.24	204	4.23	6.51
AMIN-7858	7858	4/16/03 23:00	FA	6.32	25.1	.15	21.5	2.38	.08	.96	3.51	19.7	.15	7.10
AMIN-7858	7858	4/16/03 23:00	RA	6.68	151	.26	23.3	2.44	.12	.98	9.56	208	4.25	6.73
AMIN-7858	7858	4/17/03 0:00	FA	6.15	22.7	.18	21.4	2.19	.09	1.35	3.27	5.61	.13	6.07
AMIN-7858	7858	4/17/03 0:00	RA	6.72	144	.23	22.3	2.33	.13	.94	9.18	205	3.95	6.33
AMIN-7858	7858	4/17/03 1:00	FA	6.45	24.0	.12	21.1	2.15	.06	1.26	3.24	4.11	.11	6.64
AMIN-7858	7858	4/17/03 1:00	RA	6.55	140	.23	22.8	2.35	.12	.93	9.35	195	3.93	6.43
AMIN-7858	7858	4/17/03 2:00	FA	6.41	24.8	.12	21.5	2.19	.09	1.29	3.30	4.42	.12	6.22
AMIN-7858	7858	4/17/03 2:00	RA	6.84	146	.22	22.4	2.29	.13	.90	8.96	194	3.77	6.17
AMIN-7858	7858	4/17/03 3:00	FA	6.56	23.7	.14	22.5	2.30	.09	1.06	3.39	3.15	.10	6.29
AMIN-7858	7858	4/17/03 3:00	RA	6.82	141	.19	23.0	2.34	.12	.91	9.01	191	3.73	6.29
AMIN-7858	7858	4/17/03 4:00	FA	6.41	25.6	.15	22.8	2.24	.12	1.18	3.31	4.66	.11	6.77
AMIN-7858	7858	4/17/03 4:00	RA	6.30	131	.18	23.2	2.35	.13	.90	8.87	174	3.54	6.25
AMIN-7858	7858	4/17/03 5:00	FA	6.55	26.4	.12	22.7	2.28	.10	1.31	3.19	4.96	.12	6.26

Table E2. Chemical analyses of high-flow temporal samples, Animas River, April 2003
[Filter: FA, 0.45-micrometer, RA, total recoverable; L/s, liters per second; mg/L, milligrams per liter; ug/L, micrograms per liter; Sodium bromide injected tracer]

Site	Distance	Time	Filter	Silica	Aluminum	Arsenic	Barium	Cadmium	Chromium	Cobalt	Copper	Iron	Lead	Lithum
	meters			mg/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
AMIN-7858	7858	4/17/03 5:00	RA	6.55	135	.20	23.3	2.38	.17	.91	8.75	169	3.47	6.27
AMIN-7858	7858	4/17/03 6:00	FA	6.45	26.3	.13	22.6	2.27	.10	1.50	3.21	5.50	.13	6.03
AMIN-7858	7858	4/17/03 6:00	RA	6.76	131	.17	22.5	2.36	.10	.89	8.78	175	3.32	6.32
AMIN-7858	7858	4/17/03 9:23	FA	6.88	53.1	.07	23.9	2.45	.02	.94	4.88	4.54	.17	6.48
AMIN-7858	7858	4/17/03 9:23	RA	7.22	175	.15	23.7	2.44	.05	.95	11.3	194	3.77	6.37
AMIN-7858	7858	4/17/03 10:38	FA	6.51	54.3	.09	23.5	2.36	.14	.95	4.70	4.26	.12	6.49
AMIN-7858	7858	4/17/03 10:38	RA	7.05	180	.13	24.3	2.51	.12	.96	11.6	198	3.95	6.65
AMIN-7858	7858	4/17/03 11:35	FA	6.86	61.9	.07	23.8	2.30	.10	.96	4.87	6.61	.19	6.47
AMIN-7858	7858	4/17/03 11:35	RA	6.94	180	.16	24.2	2.47	.12	.96	11.6	202	4.11	6.56
AMIN-7858	7858	4/17/03 12:45	FA	6.68	60.8	.09	24.1	2.26	.11	1.00	4.65	3.81	.16	7.22
AMIN-7858	7858	4/17/03 12:45	RA	6.94	202	.10	24.2	2.42	.15	.99	11.5	204	4.21	6.79
AMIN-7858	7858	4/17/03 14:32	FA	6.64	66.9	.09	23.8	2.10	.11	1.01	4.83	7.15	.25	7.00
AMIN-7858	7858	4/17/03 14:32	RA	7.09	188	.12	24.7	2.22	.09	1.00	11.5	249	4.53	6.62

Table E2. Chemical analyses of high-flow temporal samples, Animas River, April 2003
[Filter: FA, 0.45-micrometer, RA, total recoverable; L/s, liters per second; mg/L, milligrams per liter; ug/L, micrograms per liter; Sodium bromide injected tracer]

Site	Distance	Time	Filter	Manganese	Molybdenum	Nickel	Silver	Strontium	Vanadium	Zinc
	meters			ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
AMIN-4166	4166	4/16/03 13:00	FA	988	1.33	.51	.004	444	.05	490
AMIN-4166	4166	4/16/03 13:00	RA	310	1.83	.66	.10	461	.36	355
AMIN-4166	4166	4/16/03 14:00	FA	160	1.27	11.3	.004	452	.05	305
AMIN-4166	4166	4/16/03 14:00	RA	155	1.28	11.1	.01	442	.07	298
AMIN-4166	4166	4/16/03 15:00	FA	172	1.19	.70	.004	416	.06	276
AMIN-4166	4166	4/16/03 15:00	RA	179	1.16	.64	.02	417	.09	285
AMIN-4166	4166	4/16/03 16:00	FA	183	1.18	.69	.003	420	.06	290
AMIN-4166	4166	4/16/03 16:00	RA	189	1.17	.62	.02	412	.09	297
AMIN-4166	4166	4/17/03 8:37	FA	188	1.21	.40	.03	418	.03	395
AMIN-4166	4166	4/17/03 8:37	RA	191	1.16	.37	.02	435	.05	406
AMIN-4166	4166	4/17/03 9:48	FA	183	1.19	.38	.002	434	.02	371
AMIN-4166	4166	4/17/03 9:48	RA	189	1.28	.38	.01	420	.04	396
AMIN-4166	4166	4/17/03 11:01	FA	180	1.24	.39	.003	439	.02	351
AMIN-4166	4166	4/17/03 11:01	RA	172	1.27	.39	.01	430	.04	349
AMIN-4166	4166	4/17/03 11:59	FA	170	1.23	.64	.01	447	.03	327
AMIN-4166	4166	4/17/03 11:59	RA	173	1.32	.35	.01	463	.03	331
AMIN-4166	4166	4/17/03 13:55	FA	157	1.12	.34	.01	420	.02	311
AMIN-4166	4166	4/17/03 13:55	RA	164	1.12	.35	.02	428	.06	350
AMIN-4916	4916	4/16/03 13:00	FA	576	2.42	.59	.01	447	.05	313
AMIN-4916	4916	4/16/03 13:00	RA	598	1.72	.55	.02	452	.07	326
AMIN-4916	4916	4/16/03 14:00	FA	507	1.47	.65	.01	435	.04	277
AMIN-4916	4916	4/16/03 14:00	RA	535	2.24	.58	.02	458	.06	301
AMIN-4916	4916	4/16/03 16:00	FA	532	1.47	.58	.01	444	.07	325
AMIN-4916	4916	4/16/03 16:00	RA	531	1.39	.50	.02	422	.08	322
AMIN-4916	4916	4/16/03 17:00	FA	521	1.46	.56	.005	428	.05	328
AMIN-4916	4916	4/16/03 17:00	RA	510	1.52	.51	.02	433	.09	334
AMIN-4916	4916	4/16/03 18:00	FA	530	1.43	.59	.004	431	.04	327
AMIN-4916	4916	4/16/03 18:00	RA	519	1.47	.54	.02	423	.08	325
AMIN-4916	4916	4/16/03 19:00	FA	533	1.48	.59	.01	431	.04	354
AMIN-4916	4916	4/16/03 19:00	RA	544	1.43	.52	.03	426	.08	364
AMIN-4916	4916	4/16/03 20:00	FA	540	1.42	.62	.01	425	.03	381
AMIN-4916	4916	4/16/03 20:00	RA	561	1.52	.61	.03	415	.08	396
AMIN-4916	4916	4/16/03 21:00	FA	557	1.38	.64	.005	429	.03	437

Table E2. Chemical analyses of high-flow temporal samples, Animas River, April 2003
[Filter: FA, 0.45-micrometer, RA, total recoverable; L/s, liters per second; mg/L, milligrams per liter; ug/L, micrograms per liter; Sodium bromide injected tracer]

Site	Distance	Time	Filter	Manganese	Molybdenum	Nickel	Silver	Strontium	Vanadium	Zinc
	meters			ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
AMIN-4916	4916	4/16/03 21:00	RA	559	1.46	.54	.03	411	.07	448
AMIN-4916	4916	4/16/03 22:00	FA	587	1.38	.60	.01	431	.03	453
AMIN-4916	4916	4/16/03 22:00	RA	578	1.41	.55	.02	431	.06	464
AMIN-4916	4916	4/16/03 23:00	FA	578	1.37	.63	.01	426	.03	478
AMIN-4916	4916	4/16/03 23:00	RA	580	1.40	.54	.02	410	.06	477
AMIN-4916	4916	4/17/03 0:00	FA	577	1.47	.65	.004	452	.02	462
AMIN-4916	4916	4/17/03 0:00	RA	596	1.44	.57	.02	431	.06	464
AMIN-4916	4916	4/17/03 1:00	FA	591	1.42	.64	.002	427	.02	482
AMIN-4916	4916	4/17/03 1:00	RA	586	1.42	.56	.02	425	.06	485
AMIN-4916	4916	4/17/03 8:50	FA	611	1.54	.61	.002	453	.02	526
AMIN-4916	4916	4/17/03 8:50	RA	591	1.49	.58	.01	440	.04	541
AMIN-4916	4916	4/17/03 9:57	FA	620	1.52	.60	.002	457	.02	514
AMIN-4916	4916	4/17/03 9:57	RA	617	1.54	.57	.01	437	.04	538
AMIN-4916	4916	4/17/03 11:08	FA	588	1.50	.53	.003	443	.02	495
AMIN-4916	4916	4/17/03 11:08	RA	616	1.52	.54	.01	434	.04	521
AMIN-4916	4916	4/17/03 12:06	FA	584	1.58	.55	.002	422	.02	470
AMIN-4916	4916	4/17/03 12:06	RA	593	1.64	.52	.02	452	.04	471
AMIN-4916	4916	4/17/03 14:02	FA	540	1.36	.50	.01	434	.02	430
AMIN-4916	4916	4/17/03 14:02	RA	555	1.48	.55	.03	454	.18	455
AMIN-5536	5536	4/16/03 13:00	FA	562	1.70	.74	.002	469	.02	450
AMIN-5536	5536	4/16/03 13:00	RA	956	1.62	.71	.01	470	.04	490
AMIN-5536	5536	4/16/03 14:00	FA	866	1.64	.71	.003	468	.03	447
AMIN-5536	5536	4/16/03 14:00	RA	856	1.47	.63	.01	443	.05	454
AMIN-5536	5536	4/16/03 15:00	FA	799	1.49	.64	.003	461	.04	399
AMIN-5536	5536	4/16/03 15:00	RA	809	1.34	.57	.01	444	.07	409
AMIN-5536	5536	4/16/03 16:00	FA	839	1.50	.63	.003	453	.05	421
AMIN-5536	5536	4/16/03 16:00	RA	806	1.38	.62	.01	439	.09	423
AMIN-5536	5536	4/16/03 17:00	FA	807	1.53	.64	.003	444	.03	419
AMIN-5536	5536	4/16/03 17:00	RA	796	1.46	.59	.03	432	.05	434
AMIN-5536	5536	4/16/03 18:00	FA	799	1.51	.67	.002	437	.04	432
AMIN-5536	5536	4/16/03 18:00	RA	819	1.47	.58	.01	419	.07	464
AMIN-5536	5536	4/16/03 19:00	FA	767	1.50	.64	.003	425	.07	432
AMIN-5536	5536	4/16/03 19:00	RA	784	1.40	.61	.02	414	.12	448

Table E2. Chemical analyses of high-flow temporal samples, Animas River, April 2003
[Filter: FA, 0.45-micrometer, RA, total recoverable; L/s, liters per second; mg/L, milligrams per liter; ug/L, micrograms per liter; Sodium bromide injected tracer]

Site	Distance	Time	Filter	Manganese	Molybdenum	Nickel	Silver	Strontium	Vanadium	Zinc
	meters			ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
AMIN-5536	5536	4/16/03 20:00	FA	804	1.49	.77	.004	435	.06	481
AMIN-5536	5536	4/16/03 20:00	RA	832	1.46	.64	.02	431	.10	494
AMIN-5536	5536	4/16/03 21:00	FA	854	1.59	.74	.003	441	.04	515
AMIN-5536	5536	4/16/03 21:00	RA	850	1.38	.69	.01	427	.08	534
AMIN-5536	5536	4/16/03 22:00	FA	876	1.44	.72	.002	436	.03	525
AMIN-5536	5536	4/16/03 22:00	RA	876	1.42	.67	.02	432	.06	534
AMIN-5536	5536	4/16/03 23:00	FA	882	1.30	.60	.002	383	.04	543
AMIN-5536	5536	4/16/03 23:00	RA	877	1.37	.66	.02	422	.08	560
AMIN-5536	5536	4/17/03 0:00	FA	888	1.40	.75	.003	427	.03	559
AMIN-5536	5536	4/17/03 0:00	RA	923	1.61	.68	.01	444	.07	576
AMIN-5536	5536	4/17/03 1:00	FA	904	1.50	.72	.002	450	.02	547
AMIN-5536	5536	4/17/03 1:00	RA	911	2.12	.66	.02	431	.05	556
AMIN-5536	5536	4/17/03 9:06	FA	927	1.64	.71	.002	455	.02	564
AMIN-5536	5536	4/17/03 9:06	RA	954	1.83	.67	.02	446	.04	575
AMIN-5536	5536	4/17/03 10:07	FA	902	1.52	.66	.003	442	.02	528
AMIN-5536	5536	4/17/03 10:07	RA	913	1.52	.64	.01	458	.04	563
AMIN-5536	5536	4/17/03 11:13	FA	963	1.57	.71	.004	456	.02	540
AMIN-5536	5536	4/17/03 11:13	RA	929	1.55	.72	.01	463	.04	542
AMIN-5536	5536	4/17/03 12:14	FA	903	1.68	.65	.002	429	.02	652
AMIN-5536	5536	4/17/03 12:14	RA	949	1.66	.70	.01	428	.04	536
AMIN-5536	5536	4/17/03 14:10	FA	833	1.51	.64	.01	469	.03	452
AMIN-5536	5536	4/17/03 14:10	RA	854	1.54	.74	.04	464	.26	474
AMIN-6745	6745	4/16/03 13:00	FA	1,503	1.49	1.05	.001	451	.06	532
AMIN-6745	6745	4/16/03 13:00	RA	1,562	1.63	1.26	.02	482	.12	594
AMIN-6745	6745	4/16/03 14:00	FA	1,394	1.49	1.10	.002	468	.08	487
AMIN-6745	6745	4/16/03 14:00	RA	1,373	1.60	1.05	.01	467	.12	508
AMIN-6745	6745	4/16/03 15:00	FA	1,261	1.52	.99	.003	466	.05	411
AMIN-6745	6745	4/16/03 15:00	RA	1,254	1.57	.95	.03	471	.11	429
AMIN-6745	6745	4/16/03 16:00	FA	1,238	1.37	1.00	.003	447	.07	415
AMIN-6745	6745	4/16/03 16:00	RA	1,283	1.47	.94	.02	463	.13	445
AMIN-6745	6745	4/16/03 17:00	FA	1,282	1.37	1.08	.002	445	.05	438
AMIN-6745	6745	4/16/03 17:00	RA	1,300	1.46	.93	.03	459	.12	462
AMIN-6745	6745	4/16/03 18:00	FA	1,273	1.42	1.03	.002	457	.05	459

Table E2. Chemical analyses of high-flow temporal samples, Animas River, April 2003
[Filter: FA, 0.45-micrometer, RA, total recoverable; L/s, liters per second; mg/L, milligrams per liter; ug/L, micrograms per liter; Sodium bromide injected tracer]

Site	Distance	Time	Filter	Manganese	Molybdenum	Nickel	Silver	Strontium	Vanadium	Zinc
	meters			ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
AMIN-6745	6745	4/16/03 18:00	RA	1,283	1.52	.99	.03	455	.15	499
AMIN-6745	6745	4/16/03 19:00	FA	1,257	1.49	1.07	.003	452	.06	464
AMIN-6745	6745	4/16/03 19:00	RA	1,253	1.51	.95	.03	449	.15	492
AMIN-6745	6745	4/16/03 20:00	FA	1,265	1.45	1.18	.002	461	.05	505
AMIN-6745	6745	4/16/03 20:00	RA	1,277	1.47	1.10	.03	439	.16	533
AMIN-6745	6745	4/16/03 21:00	FA	1,329	1.44	1.16	.002	451	.06	577
AMIN-6745	6745	4/16/03 21:00	RA	1,306	1.47	1.11	.03	448	.13	587
AMIN-6745	6745	4/16/03 22:00	FA	1,294	1.47	1.12	.004	456	.05	585
AMIN-6745	6745	4/16/03 22:00	RA	1,300	1.45	1.06	.02	446	.12	607
AMIN-6745	6745	4/16/03 23:00	FA	1,273	1.38	1.14	.001	433	.05	581
AMIN-6745	6745	4/16/03 23:00	RA	1,262	1.64	1.12	.02	451	.11	617
AMIN-6745	6745	4/17/03 0:00	FA	1,308	1.39	1.15	.003	452	.04	599
AMIN-6745	6745	4/17/03 0:00	RA	1,315	1.48	1.09	.04	451	.12	621
AMIN-6745	6745	4/17/03 1:00	FA	1,297	1.40	1.15	.002	448	.05	603
AMIN-6745	6745	4/17/03 1:00	RA	1,368	1.49	1.13	.03	469	.11	665
AMIN-6745	6745	4/17/03 2:00	FA	1,327	1.38	1.10	.002	450	.04	611
AMIN-6745	6745	4/17/03 2:00	RA	1,272	2.14	1.16	.03	454	.10	612
AMIN-6745	6745	4/17/03 3:00	FA	1,306	1.35	1.16	.002	444	.04	609
AMIN-6745	6745	4/17/03 3:00	RA	1,340	1.46	1.08	.02	448	.11	630
AMIN-6745	6745	4/17/03 4:00	FA	1,373	1.50	1.14	.004	466	.04	639
AMIN-6745	6745	4/17/03 4:00	RA	1,315	1.56	1.09	.02	464	.08	627
AMIN-6745	6745	4/17/03 5:00	FA	1,383	1.34	1.13	.002	458	.02	586
AMIN-6745	6745	4/17/03 5:00	RA	1,329	1.51	1.07	.02	457	.07	586
AMIN-6745	6745	4/17/03 6:00	FA	1,333	1.38	1.24	.002	450	.03	564
AMIN-6745	6745	4/17/03 6:00	RA	1,351	1.42	1.03	.03	452	.10	601
AMIN-6745	6745	4/17/03 7:00	FA	1,353	1.49	1.38	.003	469	.03	644
AMIN-6745	6745	4/17/03 7:00	RA	1,359	1.52	1.16	.02	476	.14	643
AMIN-6745	6745	4/17/03 9:17	FA	1,405	1.48	1.07	.001	462	.01	676
AMIN-6745	6745	4/17/03 9:17	RA	1,385	1.50	1.08	.02	464	.05	654
AMIN-6745	6745	4/17/03 10:16	FA	1,478	1.49	1.14	.002	472	.01	666
AMIN-6745	6745	4/17/03 10:16	RA	1,534	1.50	1.13	.01	483	.04	688
AMIN-6745	6745	4/17/03 11:23	FA	1,440	1.59	1.14	.002	487	.01	640
AMIN-6745	6745	4/17/03 11:23	RA	1,455	1.70	1.21	.01	510	.04	653

Table E2. Chemical analyses of high-flow temporal samples, Animas River, April 2003
[Filter: FA, 0.45-micrometer, RA, total recoverable; L/s, liters per second; mg/L, milligrams per liter; ug/L, micrograms per liter; Sodium bromide injected tracer]

Site	Distance	Time	Filter	Manganese	Molybdenum	Nickel	Silver	Strontium	Vanadium	Zinc
	meters			ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
AMIN-6745	6745	4/17/03 12:20	FA	1,398	1.55	1.04	.001	469	.02	644
AMIN-6745	6745	4/17/03 12:20	RA	1,465	1.55	1.08	.01	485	.04	654
AMIN-6745	6745	4/17/03 14:16	FA	1,311	1.48	1.00	.002	491	.02	560
AMIN-6745	6745	4/17/03 14:16	RA	1,256	1.46	.98	.02	468	.05	577
AMIN-7306	7306	4/16/03 13:00	FA	1,536	1.60	1.18	.001	485	.01	598
AMIN-7306	7306	4/16/03 13:00	RA	1,525	1.55	1.13	.01	484	.05	623
AMIN-7306	7306	4/16/03 14:00	FA	1,454	1.56	1.11	.002	484	.02	552
AMIN-7306	7306	4/16/03 14:00	RA	1,439	1.61	1.06	.02	488	.05	571
AMIN-7306	7306	4/16/03 15:00	FA	1,334	1.56	1.05	.003	490	.02	507
AMIN-7306	7306	4/16/03 15:00	RA	1,293	1.59	1.00	.01	490	.05	535
AMIN-7306	7306	4/16/03 16:00	FA	1,243	1.39	1.03	.002	481	.04	440
AMIN-7306	7306	4/16/03 16:00	RA	1,317	1.43	1.05	.02	476	.10	502
AMIN-7306	7306	4/16/03 17:00	FA	1,264	1.49	1.18	.003	471	.03	515
AMIN-7306	7306	4/16/03 17:00	RA	1,259	1.53	1.11	.02	466	.09	533
AMIN-7306	7306	4/16/03 18:00	FA	1,275	1.49	1.09	.01	468	.02	518
AMIN-7306	7306	4/16/03 18:00	RA	1,254	1.55	1.10	.03	452	.10	536
AMIN-7306	7306	4/16/03 19:00	FA	1,254	1.45	1.04	.01	449	.02	527
AMIN-7306	7306	4/16/03 19:00	RA	1,230	1.48	1.01	.01	454	.07	551
AMIN-7306	7306	4/16/03 20:00	FA	1,267	1.43	1.08	.002	461	.02	564
AMIN-7306	7306	4/16/03 20:00	RA	1,280	1.49	1.07	.02	446	.07	588
AMIN-7306	7306	4/16/03 21:00	FA	1,311	1.36	1.06	.003	446	.02	590
AMIN-7306	7306	4/16/03 21:00	RA	1,309	1.47	1.06	.02	445	.07	622
AMIN-7306	7306	4/16/03 22:00	FA	1,355	1.40	1.11	.002	467	.02	633
AMIN-7306	7306	4/16/03 22:00	RA	1,288	1.54	1.11	.02	465	.07	649
AMIN-7306	7306	4/16/03 23:00	FA	1,368	1.44	1.25	.001	449	.01	657
AMIN-7306	7306	4/16/03 23:00	RA	1,323	1.44	1.06	.02	438	.06	657
AMIN-7306	7306	4/17/03 0:00	FA	1,365	1.45	1.14	.004	470	.01	647
AMIN-7306	7306	4/17/03 0:00	RA	1,349	1.46	1.09	.02	461	.06	686
AMIN-7306	7306	4/17/03 9:23	FA	1,417	1.40	1.13	.001	480	.01	659
AMIN-7306	7306	4/17/03 9:23	RA	1,452	1.38	1.08	.02	462	.05	704
AMIN-7306	7306	4/17/03 10:27	RA	1,483	1.47	1.07	.01	453	.03	692
AMIN-7306	7306	4/17/03 11:29	FA	1,504	1.44	1.16	.001	493	.01	667
AMIN-7306	7306	4/17/03 11:29	RA	1,488	2.09	1.15	.02	488	.04	695

Table E2. Chemical analyses of high-flow temporal samples, Animas River, April 2003
[Filter: FA, 0.45-micrometer, RA, total recoverable; L/s, liters per second; mg/L, milligrams per liter; ug/L, micrograms per liter; Sodium bromide injected tracer]

Site	Distance	Time	Filter	Manganese	Molybdenum	Nickel	Silver	Strontium	Vanadium	Zinc
	meters			ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
AMIN-7306	7306	4/17/03 12:26	FA	1,479	1.60	1.15	.001	480	.01	636
AMIN-7306	7306	4/17/03 12:26	RA	1,501	1.62	1.16	.02	523	.07	651
AMIN-7306	7306	4/17/03 14:22	FA	1,253	1.60	.99	.001	451	.01	568
AMIN-7306	7306	4/17/03 14:22	RA	1,318	1.93	.99	.02	442	.05	579
AMIN-7858	7858	4/16/03 13:00	FA	2,039	1.69	1.40	.003	516	.03	616
AMIN-7858	7858	4/16/03 13:00	RA	2,047	1.57	1.41	.02	517	.07	641
AMIN-7858	7858	4/16/03 14:00	FA	2,123	1.63	1.44	.002	504	.04	593
AMIN-7858	7858	4/16/03 14:00	RA	2,159	1.66	1.52	.06	524	.21	660
AMIN-7858	7858	4/16/03 17:00	FA	2,017	1.34	1.39	.003	463	.02	548
AMIN-7858	7858	4/16/03 17:00	RA	2,032	1.34	1.41	.02	502	.06	566
AMIN-7858	7858	4/16/03 18:00	FA	1,845	1.30	1.34	.001	472	.03	538
AMIN-7858	7858	4/16/03 18:00	RA	1,853	1.35	1.36	.02	492	.07	569
AMIN-7858	7858	4/16/03 19:00	FA	1,782	1.36	1.35	.002	461	.02	547
AMIN-7858	7858	4/16/03 19:00	RA	1,847	1.36	1.30	.02	468	.07	600
AMIN-7858	7858	4/16/03 20:00	FA	1,762	1.50	1.42	.002	480	.02	605
AMIN-7858	7858	4/16/03 20:00	RA	1,780	1.35	1.34	.02	478	.08	614
AMIN-7858	7858	4/16/03 21:00	FA	1,862	1.29	1.36	.01	465	.02	651
AMIN-7858	7858	4/16/03 21:00	RA	1,782	1.34	1.34	.02	473	.07	630
AMIN-7858	7858	4/16/03 22:00	FA	1,765	1.37	1.39	.004	449	.02	666
AMIN-7858	7858	4/16/03 22:00	RA	1,778	1.33	1.35	.02	471	.07	678
AMIN-7858	7858	4/16/03 23:00	FA	1,752	1.41	1.34	.01	491	.02	674
AMIN-7858	7858	4/16/03 23:00	RA	1,760	1.48	1.40	.02	497	.07	704
AMIN-7858	7858	4/17/03 0:00	FA	1,651	1.35	1.31	.001	457	.03	658
AMIN-7858	7858	4/17/03 0:00	RA	1,735	1.38	1.31	.02	478	.07	697
AMIN-7858	7858	4/17/03 1:00	FA	1,717	1.43	1.28	.002	471	.02	726
AMIN-7858	7858	4/17/03 1:00	RA	1,677	1.42	1.30	.02	479	.06	697
AMIN-7858	7858	4/17/03 2:00	FA	1,752	1.40	1.30	.001	454	.02	691
AMIN-7858	7858	4/17/03 2:00	RA	1,788	1.35	1.27	.02	468	.06	707
AMIN-7858	7858	4/17/03 3:00	FA	1,757	1.38	1.32	.001	464	.02	704
AMIN-7858	7858	4/17/03 3:00	RA	1,747	1.30	1.24	.01	477	.07	711
AMIN-7858	7858	4/17/03 4:00	FA	1,775	1.32	1.31	.01	477	.02	716
AMIN-7858	7858	4/17/03 4:00	RA	1,677	1.33	1.27	.01	481	.06	689
AMIN-7858	7858	4/17/03 5:00	FA	1,743	1.30	1.32	.001	476	.02	701

Table E2. Chemical analyses of high-flow temporal samples, Animas River, April 2003
[Filter: FA, 0.45-micrometer, RA, total recoverable; L/s, liters per second; mg/L, milligrams per liter; ug/L, micrograms per liter; Sodium bromide injected tracer]

Site	Distance	Time	Filter	Manganese	Molybdenum	Nickel	Silver	Strontium	Vanadium	Zinc
	meters			ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
AMIN-7858	7858	4/17/03 5:00	RA	1,731	1.37	1.23	.01	479	.05	702
AMIN-7858	7858	4/17/03 6:00	FA	1,709	1.31	1.33	.002	477	.02	673
AMIN-7858	7858	4/17/03 6:00	RA	1,754	1.37	1.25	.01	480	.05	715
AMIN-7858	7858	4/17/03 9:23	FA	1,875	1.42	1.36	.004	516	.01	720
AMIN-7858	7858	4/17/03 9:23	RA	1,872	1.43	1.35	.02	497	.05	741
AMIN-7858	7858	4/17/03 10:38	FA	1,969	1.45	1.37	.001	510	.01	703
AMIN-7858	7858	4/17/03 10:38	RA	1,985	1.49	1.39	.01	498	.04	755
AMIN-7858	7858	4/17/03 11:35	FA	1,900	1.50	1.42	.005	501	.01	689
AMIN-7858	7858	4/17/03 11:35	RA	1,948	1.48	1.38	.02	498	.05	710
AMIN-7858	7858	4/17/03 12:45	FA	1,893	1.54	1.36	.003	487	.01	661
AMIN-7858	7858	4/17/03 12:45	RA	1,943	1.52	1.33	.02	506	.04	683
AMIN-7858	7858	4/17/03 14:32	FA	1,764	1.54	1.25	.01	502	.01	614
AMIN-7858	7858	4/17/03 14:32	RA	1,853	1.48	1.27	.02	500	.05	674